










Secondary traumatisation, burn-out and functional impairment: findings from a study of Danish child protection workers

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ABSTRACT

Background: Child-protection workers are at elevated risk for secondary traumatization. However, research in the area of secondary traumatization has been hampered by two major obstacles: the use of measures that have unclear or inadequate psychometric properties and equivocal findings on the degree of associated functional impairment.

Objective: To assess the relationship between secondary traumatization and burnout using exploratory structural equation modelling (ESEM) and to assess the relationship between secondary traumatization and functional impairment.

Methods: A survey of Danish child-protection workers was conducted through the Danish Children Centres (N = 667). Secondary traumatization was measured using the Professional Quality of Life-5 (ProQoL-5) and burnout using the Oldenburg Burnout Inventory.

Results: A three-factor ESEM model provided the best fit to the data, reflecting factors consistent with the structure of secondary traumatization and burnout. The factors were differentially related to trauma-related and organizational variables in ways consistent with existing evidence. All factors were significantly related to functional impairment.

Conclusion: The findings supported the discriminant validity of secondary traumatization and burnout while highlighting methodological issues around the current use of sum-score approaches to investigating secondary traumatization. The current study supported the clinical relevance of secondary traumatization by linking it explicitly to social and cognitive functional impairment.

Traumatización secundaria, agotamiento profesional y deterioro funcional. Hallazgos de un estudio de trabajadores de protección infantil Daneses

Antecedentes: los trabajadores de protección infantil tienen un riesgo elevado de traumatización secundaria. Sin embargo, la investigación en el área de la traumatización secundaria se ha visto obstaculizada por dos trabas principales: el uso de variables que tienen propiedades psicométricas poco claras o inadecuadas y hallazgos equívocos sobre el grado de deterioro funcional asociado.

Objetivo: evaluar la relación entre la traumatización secundaria y el agotamiento utilizando el modelo exploratorio de ecuaciones estructurales (ESEM, por sus siglas en inglés) y evaluar la relación entre la traumatización secundaria y el deterioro funcional.

Metodología: se realizó una encuesta a los trabajadores daneses de protección infantil a través de los Centros de Niños Daneses (N = 667). La traumatización secundaria se midió utilizando la Calidad de vida profesional-5 (ProQoL-5) y el agotamiento fue evaluado utilizando el Inventario de Agotamiento de Oldenburg.

Resultados: Un modelo ESEM de tres factores proporcionó el mejor ajuste a los datos, reflejando factores consistentes con la estructura de la traumatización secundaria y el agotamiento. Los factores se relacionaron de manera diferencial con las variables relacionadas con el trauma y la organización, de manera consistente con la evidencia existente. Todos los factores estaban significativamente relacionados con el deterioro funcional.

Conclusión: Los hallazgos respaldaron la validez discriminante de la traumatización secundaria y el agotamiento, al tiempo que resaltaron los problemas metodológicos en torno al uso actual de los enfoques de suma de puntajes para investigar la traumatización secundaria. El presente estudio apoyó la relevancia clínica de la traumatización secundaria al vincularla explícitamente con el deterioro funcional social y cognitivo.

继发性创伤、倦怠和功能受损：一项针对丹麦儿童保护工作者的研究结果

背景：保护儿童的工作者遭受继发性创伤的风险较高。然而，继发性创伤领域的研究受到两个主要障碍的阻碍：使用心理测量性能不清或不足的测量以及相关功能损伤程度的可疑结果。

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关键词

继发性创伤; 倦怠; 儿童保护; 儿童福利; 探索性结构方程模型; 判别效度; 功能损伤; ESEM

HIGHLIGHTS

- Danish child protection workers are at risk for both burnout and secondary traumatization.
- Burnout and secondary traumatization are different phenomena although they share some symptoms when operationalised using the ProQoL-5 and the OLB.
- Both secondary traumatization and burnout are related to functional impairment.

目标：使用探索性结构方程模型 (ESEM) 评估继发性创伤与倦怠之间的关系，并评估继发性创伤与功能损伤之间的关系。

方法：对丹麦儿童中心667名丹麦儿童保护工作者进行了调查。继发性创伤使用《职业生活质量5》(ProQoL-5) 进行测量，倦怠使用《Oldenburg倦怠量表》进行评估。

结果：三因素ESEM模型拟合数据最佳，反映出与继发性创伤和倦怠结构一致的因素。这些因素与现有证据一致，与创伤相关和组织变量有不同程度的关联。所有因素均与功能损伤显著相关。

结论：这些发现支持了继发性创伤和倦怠的区分效度，同时强调了当前使用总和评分法研究继发性创伤的方法学问题。本研究通过将明确地将继发性创伤与社会和认知功能损伤联系起来，从而支持了继发性创伤的临床意义。

Advances in knowledge of the adverse effects of psychological traumatization have increasingly been translated into trauma-informed organizations and interventions that are gradually implemented across human service sectors. The Danish Children Centres, modelled after the Scandinavian ‘Barnahus’-concept (Søbjerg, 2017), represent one such organization that are specialized in assessing the impact of physical and sexual abuse of children. Specifically, the Danish Children Centres provide a child-friendly site for conducting forensic interviews of children, a trauma-focused assessment of the child’s psychosocial needs and coordinate the inter-sectoral efforts involving, for example, municipal social workers with the decisional authority in cases of suspected child abuse and the police district investigating and prosecuting the cases. The increased specialization in societal responses to child abuse ensures that children receive the best available care. However, it also increases the indirect exposure to trauma and adversity experienced by provisioners of these services. Indeed, providing these services might have detrimental effects on employees’ occupational well-being and job satisfaction: human service work involving indirect trauma exposure and high caseloads has been associated with secondary traumatization (Figley, 1995; Hensel, Ruiz, Finney, & Dewa, 2015) and burnout (Bakker, & Demerouti, 2007; Stalker, Mandell, Frensch, Harvey, & Wright, 2007), calling for organizations to initiate preventive efforts against the potentially corrosive effects of working with survivors of trauma.

Recently, the DSM-5 explicitly recognized indirect trauma-exposure encountered in the course of professional duties as a criterion A-event (American Psychiatric Association [APA], 2013), acknowledging that professionals are at risk for developing posttraumatic stress from working with survivors of trauma, known as secondary traumatization (Figley, 1995). Secondary traumatization is characterized by symptoms of posttraumatic stress following indirect exposure to aversive details of trauma (Greinacher, Derezza-Greeven, Herzog, & Nikendei, 2019) and is particularly prone among professionals working with child survivors of abuse (Sprang, Craig, & Clark, 2011). While secondary traumatization is an important topic for both research and practice in psychotraumatology, there is considerable

controversy surrounding its validity, measurement and importance (Elwood, Mott, Lohr, & Galovski, 2011; Molnar et al., 2017; Sprang, Ford, Kerig, & Bride, 2018). Specifically, the conceptualization and mechanism implicated in work-related secondary traumatization have been questioned (Elwood et al., 2011; Kanter, 2007; Pross, 2014; Pross & Schweitzer, 2010), inspiring researchers to rethink and reconsider the concept of secondary traumatization. (Geoffrion, Morselli, & Guay, 2016; Kadambi & Ennis, 2004). Two positions are prominent in this debate: one position argues that there is a lack of evidence supporting the existence of a unique syndrome-related first and foremost to the clinical work with trauma-survivors (Elwood et al., 2011; Kadambi & Ennis, 2004; Sabin-Farrell & Turpin, 2003). In contrast, another position recognizes issues surrounding the terminology and/or operationalizations of work-related indirect traumatization as pivotal obstacles for advancing science and practice in the field, while not calling upon these challenges to contest the reality of the syndrome itself (Horesh, 2016; Molnar et al., 2017; Sprang et al., 2018; Stamm, 1997; Walsh, Mathieu, & Hendricks, 2017). Indeed, despite a number of measures available to operationalize secondary traumatization, there are two major gaps in our current understanding: studies are lacking that investigate the severity of secondary traumatization in terms of functional impairment (PTSD Criterion G, APA, 2013), and evidence for the psychometric quality of the available measures is equivocal (Elwood et al., 2011; Sprang et al., 2018).

The Professional Quality of Life Scale (ProQoL: Stamm, 2010) is one of the most widely used measures of secondary traumatization and operationalizes the construct as part of the compassion fatigue framework including burnout and compassion satisfaction (Cieslak et al., 2014; Stamm, 2010). However, research evaluating the psychometric properties of ProQoL have produced mixed findings: some studies support the discriminant validity of secondary traumatization and burnout while questioning the validity of single items (Galiana, Arena, Oliver, Sansó, & Benito, 2017; Ghorji, Keshavarz, Ebadi, & Nasiri, 2018; Lago & Codo, 2013), whereas other studies fail to support the discriminant validity entirely (Choi, 2018; Duarte, 2017; Heritage, Rees, & Hegney, 2018), suggesting that selected items

measuring secondary traumatization and burnout should be merged to measure a single construct of compassion fatigue (Heritage et al., 2018). Particularly the validity of item 2, being strongly preoccupied with more than one client, has been questioned across different language versions of the ProQoL (Galiana et al., 2017; Lago & Codo, 2013). Overall, issues surrounding the discriminant validity of secondary traumatization have mostly been raised regarding its relationship to the construct of burnout.

Burnout is characterized by high levels of emotional exhaustion and negative attitudes towards one's work (disengagement) (Demerouti, Mostert, & Bakker, 2010). Advances in the conceptual and empirical literature on measurement of burnout have produced measures that have undergone substantial psychometric validation such as the Oldenburg Burnout Inventory (OLBI, Demerouti & Bakker, 2008; Demerouti et al., 2010; Schaufeli, Salanova, González-Romá, & Bakker, 2002). However, most studies investigating the relationship between secondary traumatization and burnout have used ProQoL, with a recent meta-analysis reporting an overall average correlation of $r = .69$ between burnout and secondary traumatization which increased to $r = .74$ in studies where both constructs were measured using the ProQoL (Cieslak et al., 2014). This finding might lend support to studies that have suggested that items measuring secondary traumatization and burnout are in fact measuring one rather than two factors (Duarte, 2017; Heritage et al., 2018). Conversely, it has been suggested that the high correlation between secondary traumatization and burnout is partially accounted for by the general distress associated with both conditions (Stamm, 2010). When interpreting this finding, however, some methodological considerations must be considered. The correlation coefficients in the studies included by Cieslak et al. (2014) were predominantly derived from analyses using summed scores uncorrected for measurement error, and therefore, the correlation might be attenuated. Conversely, since both constructs describe distressing experiences related to human service work, an alternative interpretation of the high correlation could be that some items are inadvertently measuring a degree of both constructs, thereby artificially inflating the correlation.

A common strategy for testing discriminant validity between constructs is confirmatory factor analysis (CFA, Shevlin et al., 2017; Vallières et al., 2018). While CFA provides a powerful method for testing a hypothesized factor structure, studies using CFA have hitherto not allowed for individual items to load on more than one factor. However, such cross-factor loadings are reasonably expected across constructs measuring adverse experiences related to human service work, and even small cross-factor loadings (.10) might lead to biased estimates of model-fit (Asparouhov, Muthén, & Morin,

2015; Marsh, Morin, Parker, & Kaur, 2014). Hence, if cross-factor loadings of items measuring burnout and secondary traumatization exist, studies using CFA to model the constructs as distinct would produce a suboptimal fit to the data as previously seen (Choi, 2018; Duarte, 2017). This would in turn lead to potentially erroneous conclusions of lack of discriminant validity. Recently, Hyland and colleagues (2019) used an exploratory structural equation modelling (ESEM) approach to address a similar discussion on the relationship between complex PTSD and borderline personality disorder. Exploratory Structural Equation Modelling (ESEM) is an analytical technique that combines the strengths of exploratory (multiple factor loadings) and confirmatory (model falsification) approaches (Asparouhov & Muthén, 2009). By using ESEM, Hyland and colleagues demonstrated that certain aspects of complex PTSD and borderline personality disorders were shared across the constructs while simultaneously demonstrating the integrity of the constructs as distinct phenomena (Hyland, Karatzias, Shevlin, & Cloitre, 2019).

The aim of the current study is two-fold, consisting of a methodological objective and a clinically oriented objective. The methodological objective is to test competing models of the factor structure of secondary traumatization and burnout using CFA and ESEM. We expect that ESEM will allow for the detection of potential cross-factor loadings and thus clarify the empirical relationship between the constructs. The validity of the best-fitting model will be tested through the relationship of the factors to substantiated risk factors of secondary traumatization (i.e. indirect exposure to trauma, personal history of trauma and social support, Hensel et al., 2015) and burnout (i.e. demand, influence and social support, O'Connor, Neff, & Pitman, 2018). The clinical objective is to test the relationship of burnout and secondary traumatization to cognitive and social functional impairment and job satisfaction. Specifically, studies investigating the functional impairment associated with secondary traumatization are lacking (Elwood et al., 2011) but essential for supporting the clinical relevance of the syndrome as a form of PTSD where functional impairment is a requirement (APA, 2013).

1. Methods

1.1. Participants and procedure

Participants were recruited as part of a cross-sectional online survey of burnout and secondary traumatization among Danish professionals working with survivors of child abuse in the municipalities, police-departments and Children Centres across Denmark. Children Centre employees included supervisors, psychologists and social workers that work exclusively with cases of suspected physical or sexual child abuse. Municipal

employees included supervisors, social workers and employees providing interventions that work with cases of suspected child abuse as well as cases where children fail to thrive due to other circumstances. Police employees included forensic interviewers, prosecutors and officers participating in case-consultations with Children Centre employees and municipal employees. Finally, administrative personnel across the sectors were also invited to participate, as were all departments working with survivors of child abuse across the social and police-sector in Denmark. A total of 113 departments received an invitation, and 54 departments consented, yielding a participation rate of 47.8%. Of the 761 unique participants enrolled in the study, 667 participants provided data on burnout and secondary traumatization required for the current study, yielding an inclusion-rate of 87.6%. Table 1 displays sample characteristics. The majority of the participants were married ($n = 575$, 76.6%), had children ($n = 595$, 79.1%), were employed in a full-time position of 37 h per week ($n = 641$, 86%) and had been employed between 1 and 3 years in their current job ($n = 239$, 31.9%). A total of 78.5% ($n = 590$) reported having worked overtime during the past month.

1.2. Measures

1.2.1. Background information

Participants' age measured in years, gender and profession was recorded for the current study. Participants were asked to disclose whether they had ever personally experienced any subjectively rated traumatic event (0 = no/1 = yes).

Exposure-characteristics: Participants were asked about (1) the ratio of time spent working face to face with children ('direct') and reading, viewing or discussing case-materials ('indirect') on a 5-point scale ('0% of the time' to '76–100% of the time'), (2) the severity of their cases with one item assessing whether employees had had cases with survivors of physical or sexual child-abuse in the past month ('abuse case', 0 = no/1 = yes), and one item assessing how often they had had cases in which someone had committed suicide or harmed themselves in the past year ('suicide/self-harm', 5-point Likert-like scale from 'never' to 'very often').

1.2.2. Work-characteristics

Scales from The Copenhagen Psychosocial Questionnaire (COPSOQ, Pejtersen, Kristensen, Borg & Bjoerner, 2010) short version were used to assess quantitative demands (2 items), influence (2 items), and social support from supervisor and colleagues (2 items each). Items are rated on a 5-point Likert-like scale ranging from 0 ('Always'/'To a very large extent') to 4 ('Never'/'To a very small extent'). Scores ranged from 0 to 8 points for each subscale. Job satisfaction was operationalized using a single-item measure from the COPSOQ scored on a 4-point Likert-like scale ranging from 0 ('Very dissatisfied') to 3 ('Very satisfied').

1.2.3. Secondary traumatization: professional quality of life scale (proqol-5)

Secondary traumatization was operationalized using the 10-item secondary traumatization module from The ProQoL-5 (ST, Stamm, 2010). Participants were

Table 1. Sample descriptive statistics.

	Children Centre	Municipalities	Police	Total sample
N (% of total sample)	64	542	61	667 (100%)
Age (years; M, SD)	41.7 (8.1)	40.7 (11.6)	45.1 (8.1)	41.2 (11.1)
Gender (N, % women)	60 (93.8%)	501 (92.6%)	24 (39.3%)	585 (87.8%)
N (%) personal trauma history	33 (53.2%)	573 (53.5%)	26 (42.6%)	297 (47.2%)
Direct exposure (mode)	1–25% of time 24 (37.5%)	1–25% of time 308 (57%)	1–25% of time 29 (47.5%)	1–25% of time 361 (54.4%)
Indirect exposure (mode)	26–50% of time 24 (37.5%)	50–75% of time 229 (42.3%)	1–25% of time 23 (37.7%)	50–75% of time 261 (39.1%)
N (%) having worked with physical/sexual abuse in past month	64 (100%)	211 (38.9%)	56 (91.8%)	331 (49.6%)
N (%) having worked on cases with suicide/self-harm (mode)	'Never', 39 (60.9%)	'Rarely', 168 (31%)/'Sometimes', 169 (31%)	'Never', 37 (60.7%)	'Never' 232 (34.8%)
Demand (M, SD)	1.81 (.78)	1.22 (.98)	1.8 (0.94)	1.33 (0.99)
Control (M, SD)	2.29 (.68)	1.9 (0.8)	2.24 (.79)	1.97 (.80)
Social support, colleagues (M, SD)	3.14 (.72)	3.16 (.67)	2.91(.58)	3.13 (.67)
Social support, supervisor (M, SD)	2.76 (.77)	2.58 (.88)	2.56 (.79)	2.60 (.86)
Secondary traumatization (Mean sum, SD)	16.88 (5.61)	17.15 (5.2)	14.03 (4.58)	16.84 (5.26)
Disengagement (Mean sum, SD)	16.63 (3.07)	17.7 (3.87)	18.08 (3.54)	17.63 (3.78)
Exhaustion (Mean sum, SD)	18.70 (4.09)	19.74 (3.9)	18.1 (3.6)	19.5 (3.92)

The Children Centre sample was comprised of 7 administrative employees, 8 supervisors, 22 social workers and 27 psychologists. The municipal sample was comprised of 6 administrative employees, 24 supervisors, 486 social workers, 50 employees providing interventions and 46 employed in a function listed as 'other'. The majority of employees in the police-sample had multiple functions with 45 working as forensic interviewers, 4 as prosecutors, 58 working with case-management and 34 participating in case-consultations. Range for demand, control, social support supervisor and colleagues: 0–4.

instructed to rate each item on a 5-point Likert-like scale ranging from 1 ('Never') to 5 ('Very often') with reference to work-related experiences over the past 30 days. For example, item 14 asks the respondent to rate how often 'I feel as though I am experiencing the trauma of someone I have [helped]'. The ProQOL is a screening and research tool and is not used for diagnostic purposes (Stamm, 2010). A provisional assessment of risk for ST can be achieved by summing items for the subscale, using cut-off scores of >22, 23–41 and 42< to determine a low, normal or high risk for ST, respectively. The ProQoL has demonstrated good internal consistency ($\alpha = .81$, Stamm, 2010) that was preserved in the current study with $\alpha = .80$. The Danish translated version of the measure (ProQoL-5) was utilized and the full item-formulations are freely available via www.proqol.com or Stamm (2010).

1.2.4. Burnout: oldenburg burnout inventory (OLBI)

The OLBI is a 16-item measure of burnout with two components: energy (comprised of two highly correlated dimensions: vigour and exhaustion), and (dis)engagement (comprised of distancing and dedication that form opposite ends of a latent continuum, Demerouti et al., 2010). Items are rated on a 4-point Likert-like scale ranging from 1 ('strongly agree') to 4 ('strongly disagree'). For example, respondents are asked to rate to what extent they agree to statements such as number 9 'Over time, one can become disconnected from this type of work', measuring disengagement. Each component is comprised of four positively and negatively phrased items corresponding to the respective dimensions. For the current study, all positively phrased items were reverse scored to measure burnout. Subscale-scores were calculated by summing items. An English version of the scale has previously having acceptable reliability scores (Cronbach's $\alpha > .70$) and good factorial and construct validity (Halbesleben & Demerouti, 2005). The current study used a Danish version of the measure with Cronbach's α for the full scale ($\alpha = .87$), exhaustion ($\alpha = .82$) and disengagement (.78) subscales retaining acceptable reliability. The full item-formulations are available in Demerouti et al. (2010).

1.2.5. Functional impairment: WHO disability assessment schedule (WHODAS)

The WHODAS is a 36-item self-report scale to evaluate functional impairment across 6 distinct dimensions in the past 30 days; cognition, mobility, self-care, getting along, life activities and participation (Üstün, Kostanjsek, Chatterij & Rehm, 2010). Items were rated on a 5-point Likert-like scale ranging from 0 ('None') to 4 ('Extreme or cannot do'). For the current study, we relied

on an assessment of functional impairment in the domains of cognitive and social functioning. A sum-score of functional impairment for each domain was calculated, and possible scores ranged from 0 to 24 and 0 to 20 for the cognitive and social subscale, respectively, with higher scores indicating higher levels of impairment. WHODAS has previously demonstrated excellent internal consistency with $\alpha = .94$ for cognitive impairment and $\alpha = .93$ for social impairment (Üstün et al., 2010), and the scale retained good internal consistency in the current sample ($\alpha = .85$ and $.83$, respectively).

1.3. Data analysis

Data analysis proceeded in two linked stages. To address the methodological objective, we tested five different measurement-models of burnout and secondary traumatization. Model 2 and 3 was specified using CFA. Model 2 assumed two factors consistent with secondary traumatization, measured by the ProQoL, and burnout, measured by OLBI-items. Model 3 assumed three factors of secondary traumatization, measured by the ProQoL-items, and exhaustion and disengagement, measured by the OLBI. Model 1, 4 and 5 were specified using EFA: Model 1 assumed a one-factor structure indicated by items from ProQoL and OLBI. Model 4 assumed a two-factor structure of the data, whereas model 5 assumed a three-factor structure of the data. Model 4 and 5 were hypothesized to be structurally identical to model 2 and 3 but specified using EFA where item factor-loadings were free to vary and to load on multiple factors (cross-loadings). Figure 1 displays the models tested. A structural model testing the relationship between the factors of the best-fitting model and correlates of burnout and secondary traumatization was conducted to test the validity of the model. This model included age, sex, personal trauma history, profession (municipal employee, police employee or children centre employee), severity of exposure, demand, control and social support from supervisor and colleagues as predictors of the factors.

Building on the results from stage one, a structural model testing the relationship between burnout and secondary traumatization, and functional impairment and job satisfaction was specified to address the clinical objective. To examine whether the correlates from stage 1 had a direct effect on functional impairment and job satisfaction, four structural models were tested. One specifying direct effects from correlates to outcomes only (I), one specifying effects from factors to outcomes only (II), and a model combining I and II (III). Figure 2 displays the final model. Missing data on one or more of the predictor-variables was reported by 8.2% of the participants and was handled using list-wise deletion, resulting in a total sample of $n = 612$ participants for the structural model.

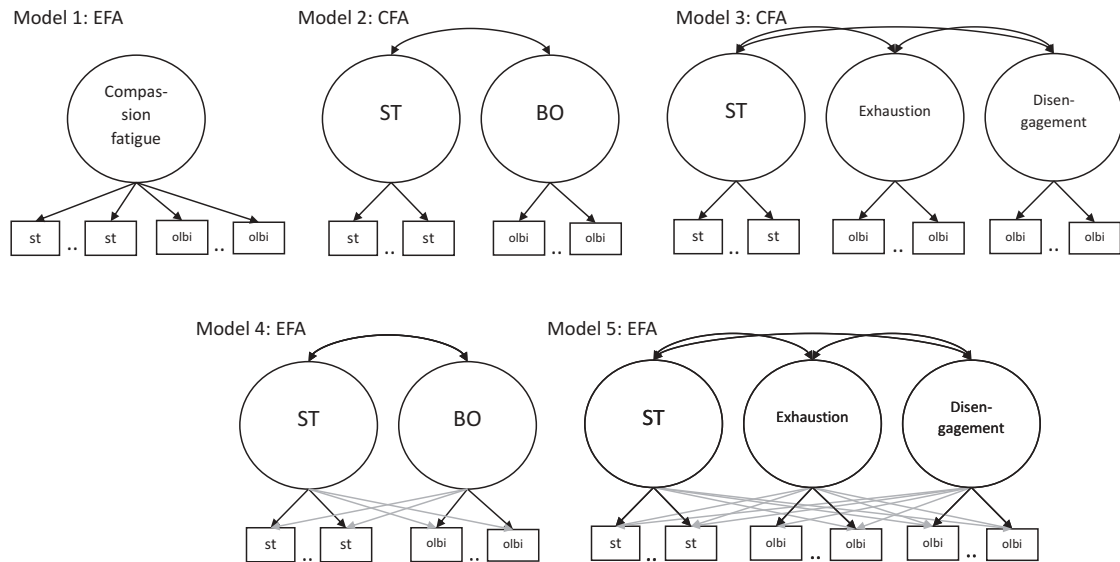


Figure 1. Proposed measurement models of secondary traumatization and burnout.

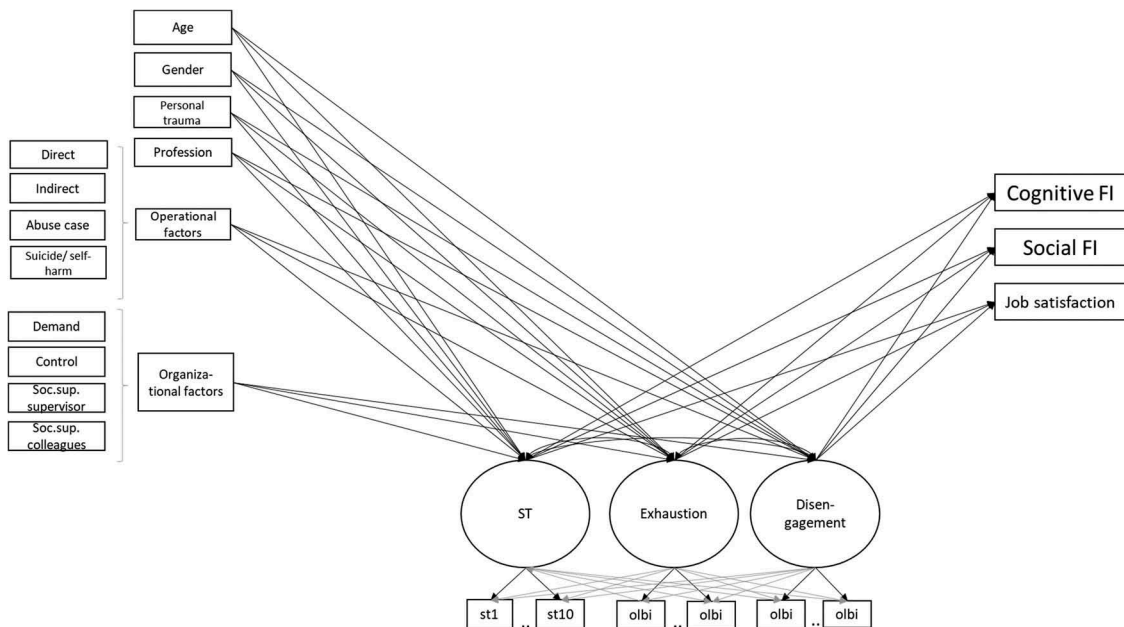


Figure 2. Structural model of the relationship between predictors and outcomes of secondary traumatization and burnout. Soc.sup.: Social support. FI: Functional impairment.

The fit of each model was assessed using a number of goodness-of-fit statistics. A non-significant chi-square-test (χ^2) is indicative of acceptable model fit, however, this test statistic is positively related to sample size and therefore a significant result should not solely lead to the rejection of a model in large sample-sizes (Tanaka, 1987). Two incremental fit-indices were used to assess goodness of model-fit compared to an independence model. The Comparative Fit Index (CFI, Bentler, 1990) and Tucker–Lewis Index (TLI, Tucker & Lewis, 1973), both for which values $> .90$ and $> .95$ indicate adequate and excellent fit, respectively (Hu & Bentler, 1995; Kline, 2005). These indices were supplemented by three parsimony-corrected fit-indices: The

Akaike Information Criterion (AIC, Akaike, 1987), the Bayesian Information Criterion (BIC, Schwarz, 1978) and the sample-size adjusted BIC (ssaBIC, Sclove, 1987). Additionally, two absolute fit-indices were used to assess model misfit: The Root Mean Square Error of Approximation (RMSEA) values and Standardized Root Mean Square Residual (SRMR) with values $< .08$ and $< .05$ indicating adequate and excellent model fit, respectively (Jöreskog & Sörbom, 1981, 1993). For all fit indices, lower values are indicative of a more closely fitting model and therefore preferable. All analyses were performed in Mplus 8.11 using robust maximum likelihood (MLR) estimation (Yuan & Bentler, 1998).

2. Results

Table 2 shows the fit statistics for models 1–5. Model 1 provided a poor fit to the data, whereas fit indices improved up until the AIC, BIC and ssaBIC indicated that model 5 provided the best fit to the data across all models tested. This was corroborated by the CFI indicating model 5 as the only model providing an adequate fit, the TLI approximating an adequate fit and the SRMR and RMSEA indicated that model 5 represents an excellent approximation to the data-structure. Model 5 was therefore selected as the best-fitting model.

Table 3 displays the factor-loadings and cross-loadings of the items onto the factors. Three factors emerged that displayed factor loadings consistent with theoretical accounts and previous research on the structure of ST, and disengagement and exhaustion as constituents of BO. Results also suggested the existence of cross-factor loadings of statistical significance and relevant magnitude across some indicators of all factors. Specifically, the

magnitude of cross factor loadings ranged from -0.237 for OLBI15 to 0.447 for ST2. The construct of secondary traumatization was supported with only one hypothesized item not loading statistically significantly onto the factor (ST-2), and with some items displaying cross-loadings onto the disengagement (ST-2, 28) and exhaustion factor (ST-2, 5, 7, 11, 28). Similarly, all hypothesized indicators of disengagement loaded statistically significantly onto the same factor, and four items displayed cross-loadings onto ST (OLBI item 11) or exhaustion (OLBI items 1, 11, 15). Finally, all but three hypothesized indicators of exhaustion (OLBI-5, 14, 16) loaded statistically significantly onto the same factor with a total of five items displaying cross-factor loadings onto ST (OLBI-5, 8) or disengagement (OLBI-5, 8, 10, 12, 14, 16).

Tables 4 and 5 displays the regression coefficients for the structural model of correlates and factors, and factors and functional impairment and job satisfaction, respectively. The model provided an adequate description

Table 2. Fit statistics for measurement models of burnout and secondary traumatization.

Model	Chi ² (df) p	AIC	BIC	ssaBIC	RMSEA (95% CI)	CFI	TLI	SRMR
Model 1	1712.454 (299), p < .01	36139.822	36491.039	36243.385	.084 (.080–.088)	.695	.669	.083
Model 2	1151.695 (298), p < .01	35472.336	35828.056	35577.226	.066 (.062–.070)	.816	.799	.066
Model 3	1002.818 (296), p < .01	35297.468	35662.194	35405.014	.060 (.056–.064)	.848	.833	.063
Model 4	924.341 (274), p < .01	35233.387	35697.174	35370.143	.060 (.055–.064)	.860	.834	.047
Model 5	619.087 (250), p < .01	34910.528	35482.382	35079.150	.047 (.042–.052)	.920	.897	.036

Model 1: one-factor EFA (occupational stress). Model 2: Two-factor CFA (BO and ST, no cross-loadings). Model 3: Three factor CFA (disengagement, exhaustion and ST, no crossloadings). Model 4: Two factor EFA (BO and ST including cross-loadings), Model 5: Three factor EFA (disengagement, exhaustion, ST, including cross-loadings).

Table 3. Hypothesized and actual pattern of factor loadings and cross-loadings of model 5.

Item	Keyword	F1 – Secondary traumatization		F2 – Disengagement		F3 – Exhaustion	
		λ	p	λ	p	λ	p
ST2	Preoccupied	0.074	0.333	-0.182	0.005	0.447	0.000
ST5	Startle	0.349	0.000	-0.036	0.469	0.232	0.010
ST7	Separate	0.359	0.000	-0.003	0.938	0.362	0.000
ST9	Affected	0.675	0.000	-0.005	0.888	0.107	0.314
ST11	On edge	0.451	0.000	-0.010	0.751	0.370	0.000
ST13	Depressed	0.694	0.000	0.073	0.163	-0.025	0.615
ST14	Contagion	0.589	0.000	0.010	0.809	-0.060	0.339
ST23	Avoidance	0.571	0.000	-0.035	0.489	-0.018	0.728
ST25	Intrusions	0.651	0.000	0.048	0.327	0.079	0.324
ST28	Memory	0.236	0.004	0.117	0.065	0.225	0.007
OLBI1	New aspects	-0.031	0.470	0.730	0.000	-0.266	0.006
OLBI2	Tired before	-0.084	0.081	0.400	0.000	0.488	0.000
OLBI3	Talk negative	0.066	0.289	0.624	0.000	0.134	0.302
OLBI4	More time	0.031	0.495	0.194	0.058	0.558	0.000
OLBI5	Pressure	0.234	0.002	0.311	0.000	0.079	0.387
OLBI6	Mechanical	-0.031	0.695	0.490	0.000	0.110	0.381
OLBI7	Positive chal.	0.013	0.728	0.747	0.000	-0.050	0.636
OLBI8	Emot. drain	0.157	0.001	0.354	0.000	0.394	0.000
OLBI9	Disconnected	-0.047	0.474	0.351	0.000	0.131	0.220
OLBI10	Leisure	0.110	0.076	0.189	0.006	0.322	0.000
OLBI11	Sickened	0.188	0.002	0.279	0.000	0.199	0.020
OLBI12	Worn out	-0.008	0.621	0.234	0.033	0.620	0.000
OLBI13	Only work	-0.017	0.766	0.520	0.000	-0.143	0.063
OLBI14	Manage well	0.055	0.508	0.335	0.000	0.105	0.176
OLBI15	Engaged	0.039	0.420	0.842	0.000	-0.237	0.007
OLBI16	Energized	-0.081	0.178	0.674	0.000	0.006	0.872

Grey slots in the table indicate the hypothesized factor loadings and bold writing indicate statistically significant factor loadings ($p \geq .05$). The reported factor loadings are standardized. OLBI: Oldenburg Burnout Inventory. ST: ProQoL Secondary Traumatization. Chal.: Challenge. Emot.: Emotional.

of the data ($\chi^2(657) = 1367.959$, $p > .01$, RMSEA (90% CI) = .042 (.039 – .045), CFI = .886, TLI = .865, SRMR = .039), with absolute fit indices indicating acceptable levels of misfit in the model. However, incremental fit indices were slightly lower than desired, which might indicate that the model misrepresents some aspects of the data. Inspecting the modification indices, the paths that would contribute most to improving model fit were correlated residuals between ProQoL-5 items (ST7 and 8) and OLBI items (OLBI5 and 14). To avoid overfitting the model to the current data, these were not included in the model. A statistically significant amount of variance in each factor was explained by the correlates. Personal trauma history and lower social support from colleagues and supervisor was significantly related to secondary traumatization that was lower amongst municipal and police employees compared to children centre employees. Demand, lower control, and lower social support from supervisor was related to disengagement, that similarly was lower amongst municipal employees. Finally, personal trauma history and lower control were the only predictors related to exhaustion, that was lower amongst police employees. Secondary traumatization was correlated at $r = .31$, $p < .01$ and $r = .49$, $p < .01$ with disengagement and exhaustion, respectively, and disengagement and exhaustion were correlated at $r = .37$, $p < .01$.

All factors were significantly related to functional impairment, with exhaustion being most strongly related to both types of functional impairment out of the three factors. Secondary traumatization was most strongly related to social impairment, whereas disengagement was most strongly related to cognitive impairment and the only factor related to job satisfaction.

3. Discussion

The purpose of the current study was to provide a methodological and clinically oriented contribution to the literature on the relationship between secondary traumatization and burnout. Results indicated that secondary

Table 5. Standardized regression coefficients for the structural model (outcomes).

	Cognitive functional impairment ($R^2 = .437$)		Social functional impairment ($R^2 = .333$)		Job satisfaction ($R^2 = .219$)	
	β	p	β	p	β	p
Secondary traumatization	.167	.021	.268	.000	-.045	.338
Disengagement	.260	.001	.150	.023	-.442	.000
Exhaustion	.389	.000	.302	.000	-.015	.871

traumatization is a coherent construct when operationalized using the ProQoL-5, and that it appears to be distinguishable from burnout in terms of its factor structure and relationship to substantiated predictors. Additionally, secondary traumatization was significantly related to functional impairment, most strongly to social impairment, highlighting that while social support might be protective against secondary traumatization, the syndrome itself might contribute to eroding sources of support. The provision and continued availability of social support appears to be a promising area for preventive efforts (Sage, Brooks, & Greenberg, 2018), but further research mapping the use and effect of available support is needed to guide these efforts.

Factor correlations between secondary traumatization and burnout dimensions were smaller than the average correlations reported by Cieslak et al. (2014), suggesting that magnitudes of the relationship reported in existing research might be inflated due to some individual indicators of burnout and secondary traumatization tapping work-related experiences that are shared between the constructs. The current study documented the existence of cross-loadings of a relevant magnitude for several items: Three items from the OLBI simultaneously loaded onto secondary traumatization, and five items from ProQoL-ST simultaneously loaded onto one or both burnout dimensions with some cross-loadings of similar magnitude as factor loadings. The strongest cross-factor loadings were seen for ST7 and ST11. ST11 (feeling 'on edge' about various things) has previously been suggested to measure 'wear and tear' associated with burnout over secondary traumatization (Duarte, 2017), and the content

Table 4. Standardized regression coefficients for the structural model (predictors).

	F1 – Secondary traumatization ($R^2 = .197$)		F2 – Disengagement ($R^2 = .378$)		F3 – Exhaustion ($R^2 = .390$)	
	β	p	β	p	β	p
Age	-.068	.156	-.115	.004	-.147	.002
Gender	-.033	.405	.060	.146	.037	.540
Personal trauma history (1 = no, 2 = yes)	.117	.003	-.016	.669	.091	.046
Municipal employee	-.434	.000	-.195	.007	.071	.460
Police employee	-.274	.000	-.036	.539	-.166	.023
Direct exposure	.089	.046	-.034	.373	.024	.626
Indirect exposure	.050	.329	.039	.321	.047	.279
Abuse case	.043	.411	.056	.146	-.006	.896
Suicide/self-harm	.100	.067	-.043	.275	.051	.245
Demand	.003	.960	.298	.000	.128	.054
Control	-.129	.082	-.254	.000	-.335	.000
Social support, supervisor	-.227	.000	-.217	.000	-.068	.235
Social support, colleagues	-.124	.019	-.050	.244	-.025	.573

of ST7 (difficulties separating personal life from life as a helper) resembles work-family conflict that has previously been associated with both burnout and secondary traumatization in child-protection workers (Baugerud, Vangbæk, & Melinder, 2018). Hence, these items appear to be measuring experiences that are associated with both burnout and secondary traumatization. Similarly, OLBI-8, OLBI-11 and ST-28 loaded onto all factors albeit with weaker loadings, suggesting that feelings of emotional drain, feeling sickened by work-tasks and having difficulties recalling important parts at work either also represents work-related experiences associated with both burnout and secondary traumatization, or might represent more generic responses to occupational stress based on the low loadings on all factors. Consequently, if one or more of these experiences persist it might be beneficial to consider both organization- and trauma-related threats to occupational health.

The finding of cross-factor loadings also carries implications for the predominant use of the sum-score approach in existing literature in investigating the relationship between secondary traumatization and burnout. The sum-score approach assumes that all indicators measure the factor perfectly (e.g. are error-free) and equally well. While it is uncontroversial that this assumption is not met in psychological research, results from the current study suggest that it is violated to an extent that is likely to lead to misspecification of relationships between burnout, secondary traumatization and other constructs. A most notable example is found in a comparison of the sum-score approach and factor approach to assessing risk of secondary traumatization across different occupational groups in the current study. The sum-score approach would suggest that municipal employees scored equally or slightly higher on secondary traumatization compared to children centre employees, whereas the factorial approach indicated that municipal employees were at statistically significantly lower risk for secondary traumatization than children centre employees, suggesting that the focussed provision of services to child survivors of abuse is associated with increased levels of secondary traumatization.

Finally, an exploratory aim of the current study was to investigate the relationship between secondary traumatization, burnout and job satisfaction. Notably, both secondary traumatization and exhaustion were unrelated to job satisfaction which was related solely to disengagement. Studies have previously noted that high levels of emotional exhaustion do not impact the level of job-satisfaction among some child-protection workers, which might be explained by the buffering effect of organizational factors such as job resources and support (Stalker et al., 2007). This effect might generalize to secondary traumatization, but studies employing a more elaborate assessment of job

satisfaction and turnover intentions are needed to further explore this finding, as research among substance abuse counsellors indicates that secondary traumatization indirectly influences job commitment through job-satisfaction (Bride & Kintzle, 2011)

Limitations of the current study include a cross-sectional design that precludes any causal inferences about the relationship between correlates and outcomes. The results cannot be generalized to the relationship between secondary traumatization and burnout when both constructs are studied using other measures, and more studies are needed to explore whether specific cross-factor loadings can be generalized or differ across measures or professional groups. Future research is warranted with the aim of validating a cut-off for measures of secondary traumatization that is consistent with clinically relevant levels of functional impairment and distress to support epidemiological studies of secondary traumatization. This will in turn support further exploration of the risk of protective factors of the syndrome before studies evaluating the effectiveness of intervention and preventive initiatives are warranted.

4. Conclusion and impact statement

Findings from the study supports the conceptual integrity of secondary traumatization using a novel methodological approach and provides what appears to be the first piece of evidence explicitly linking secondary traumatization to social and cognitive functional impairment, supporting the clinical importance of the construct. Cross-loadings highlight work-related experiences that appear to be shared across secondary traumatization and burnout. The continuous report of more of these experiences might be indicative of the need for further screening for burnout and secondary traumatization alike.

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