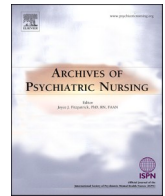




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## Secondary traumatic stress and dissociative coping strategies in nurses during the COVID-19 pandemic: The protective role of resilience<sup>☆</sup>

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### ABSTRACT

During the COVID-19 pandemic, nurses are repeatedly exposed to acute stress at their workplace, and therefore, they are at high risk for developing mental health symptoms. The prolonged exposure of healthcare professionals may lead to Secondary Traumatic Stress (STS). STS is an aspect of “cost of care”, the natural consequence of providing care to people who suffer physically or psychologically. The purpose of this study was to investigate the levels of STS in nurses during the first phase of the COVID-19 pandemic in Greece and to detect aggravating and protective factors. Participants were 222 nurses (87.4 % women; mean age 42.3 years) who completed an online survey. The questionnaire comprised of the Secondary Traumatic Stress Scale, the Brief Resilience Scale, and the Brief Coping Orientation to Problems Experienced Inventory. Nurses had high levels of STS. The hierarchical regression analyses showed that STS and its dimensions Avoidance and Arousal were positively predicted mainly by denial and self-distraction coping strategies and inversely by resilience. Resilience exhibited a protective (partial mediation) effect on the strong relationship between the dissociative coping strategies (denial, self-distraction, venting and behavioral disengagement) and STS. Trauma-informed care psychosocial interventions are needed to support the already overburdened nursing staff during the coronavirus pandemic.

### Introduction

The new coronavirus (COVID-19) began spreading in China at the end of 2019 and, to date, represents an international health emergency with major effects on health and economy (World Health Organization, 2020). In Greece, the first COVID-19 case was diagnosed on February 26, 2020 (Giannopoulou & Tsobanoglou, 2020). While the country was emerging from a long-lasting period of profound economic crisis, the COVID-19 outbreak brought the public healthcare system to the edge of collapse.

Nurses are under extreme psychological pressure due to their

prolonged workplace exposure to the deadly virus. Avoiding contact with their families because of fear of infecting them, experiencing heavy workloads and lack of adequate personal protective equipment and medication (Arpacioglu et al., 2020) are aggravating factors for their mental health (Xiang et al., 2020). According to Ilhan and Küpeli (2022) increased levels of STS, anxiety, and depression were observed among nurses during the pandemic. Furthermore, according to Lin et al. (2020) nurses were found to have lower resilience when compared to doctors and other medical staff. Constantly suffering the threat of being exposed and infected by the virus, nurses are, therefore, at higher risk of developing dysfunctional coping strategies and behaviors.

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### Secondary traumatic stress

Secondary Traumatic Stress (STS) emerges from work-related secondary exposure to extremely stressful events (Figley, 1995), as a consequence of caring for clients who are traumatized, in pain or suffering (Mangoulia et al., 2015). Secondary exposure to trauma is now considered a DSM-5 Criterion A stressor for posttraumatic stress disorder (PTSD; American Psychiatric Association, 2013) and early detection of severe STS symptoms may be associated with PTSD. According to Adriaenssens et al. (2012), symptoms of STS include intrusive recurring thoughts, fatigue, disturbed sleep, hyperarousal, physical symptoms, anxiety, depression, and emotional arousal.

The history of trauma experiences, adverse childhood experiences (Butler et al., 2017) and the coping style previously used to deal with these experiences (Figley, 1995) are the major risk factors for developing STS. Dutton and Rubinstein (1995) have also stipulated that STS reactions by nurses were predicted by secondary exposure to traumatic events experienced at the workplace, use of coping strategies, and psychological and contextual characteristics. Self-efficacy in implementing the COVID-19 protocols has been inversely related to STS (Cai et al., 2020).

There is a small number of studies showing that healthcare professionals during current pandemic experience moderate to high levels of STS (Lee et al., 2021; Ranieri et al., 2021; Vagni et al., 2020). Contact with COVID-19 patients referred to as an aggravating factor for STS (Orrù et al., 2021. Trumello et al., 2020) while other studies found that nurses not working closely with COVID-19 patients experienced more severe symptoms compared with their frontline colleagues working in the emergency services (Li et al., 2020) and İlhan and Küpeli (2022) did not validate differences between two groups in nurses. Given the inconsistent findings, it would be useful to examine levels of STS in the Greek nurses in terms of their contact with COVID-19 patients.

The relationship between dissociation and trauma has been well documented (van der Kolk et al., 1996). Dissociation describes a complex process of detachment often experienced during a traumatic event (peritraumatic dissociation; Marmar et al., 1996), or else, one's unwillingness to be exposed to human suffering or trauma that often creates the strong desire to "walk out right now" (Missouridou, 2017). As suggested by Samson and Shvartzman (2018), medical personnel tend to develop a clinical level of dissociation that puts them at increased risk for STS. There are few studies available which, however, prove the connection between STS and peritraumatic dissociation in mobile crisis workers (Plouffe, 2015), palliative care providers (Samson & Shvartzman, 2018), and social workers (Lev-Wiesel et al., 2009; Samson et al., 2021). According to Ozer et al. (2003), a crucial predictor of post-traumatic symptoms is a personal tendency toward dissociation during exposure to a stressful event that results in detachment experienced in the course of a traumatic event (Samson et al., 2021) and worsens the prognosis (Levin et al., 2014). During COVID-19 pandemic, large percentage of nurses (61 %) evidenced significant peritraumatic dissociative experience (Ranieri et al., 2021) and showed the highest percentages peritraumatic dissociation among other healthcare workers (Azoulay et al., 2020).

### Coping strategies and STS

Coping strategies are the cognitive and behavioral efforts made to control, reduce, or tolerate the internal or external requirements that threaten or overwhelm the individual's response capacity (Lazarus & Folkman, 1984). Ehlers and Clark's (2000) model for trauma and PTSD suggests that the experience of a threat initiates a series of coping strategies (excessive precautions, maladaptive responses to intrusive memories and persistent dissociation) that intend to minimize the threat, albeit they maintain the trauma symptoms (e.g., PTSD) (Beierl et al., 2020).

Study findings have shown either problem-focused (e.g., active

coping) (Howlett et al., 2015) or emotion-focused strategies (e.g., rumination, emotional expression,) (Rodríguez-Rey et al., 2019) or dysfunctional coping strategies (e.g., avoidance or self-blame) (Mauder et al., 2006) be associated with increased levels of trauma-related stress or PTSD in the healthcare workers. Clusters of coping strategies (problem-focused, emotion-focused, dysfunctional) are associated with different outcomes (Lazarus & Folkman, 1984). Therefore, through the present study we attempt to investigate the observed inconsistency in the findings regarding the association of coping strategies and trauma/PTSD-related situations during the COVID-19 period and we try to review the operation of coping strategies and its clusters. Researchers have proposed different clusters, such as problem-focused vs. emotion-focused (Lazarus & Folkman, 1984), adaptive vs. maladaptive (Meyer, 2001). Zuckerman and Gagne (2003) and Kalaitzaki et al. (2021) have suggested that coping responses should not be a priori defined as adaptive or maladaptive, since context is significant in attributing the meaning of adaptiveness. What seems to be consistent in the relevant literature are the specific coping strategies that are most frequently used. Studies have shown the use of avoidance and minimization by emergency medical service personnel (Kerai et al. (2017), avoidance or self-blame by healthcare professionals (Mauder et al., 2006), behavioral disengagement and distraction by nurses (Wong et al., 2005), "Stop Unpleasant Emotions and Thoughts" by healthcare and emergency workers (Vagni et al., 2020), and denial, self-distraction, and behavioral disengagement by healthcare professionals (Kalaitzaki & Rovithis, 2021), all of which have an underlying dissociative feature. In this study we proposed and examined a new classification of the coping strategies based on our belief that shared dissociative features exist between self-distraction, venting, denial, and behavioral disengagement.

### Resilience and STS

Most researchers have recently agreed that psychological resilience is a complex concept and can be considered as a dynamic process that leads to health, adaptation, and positive functioning (Southwick et al., 2014; Tsigkaropoulou et al., 2018); thus, it is a modifiable factor (American Psychological Association, 2020). By definition resilience refers to one's continuing effort/battle to cope with a stressful situation before, during, or after the development of any potential psychopathology symptoms (e.g., PTSD) (Kaye-Kauderer et al., 2021).

Nurses seem to be extremely vulnerable, exhibiting a less-resilient response to the COVID-19-related stress compared to doctors and other support staff (Lin et al., 2020). Previous studies have found that resilience was negatively associated with STS (Foster et al., 2019; McGarry et al., 2013; Roden-Foreman et al., 2017; Yu et al., 2019). On the other hand, resilience may play a protective role against trauma-related stress and the risk of developing STS in healthcare professionals during a pandemic (Heath et al., 2020; Maiorano et al., 2020). According to Rees et al. (2015) based on the model of International Collaboration Work force Resilience (ICWFR) resilience mediates the relationship between coping and psychological adjustment. Given the aggravating effect of dissociative copings on STS, we expected that resilience could play a protective role against the development of STS, so we chose to consider his potential mediating role.

### The present study

The aim of this study was threefold: (a) to determine the prevalence of STS in nurses and if contact with COVID-19 patients related to STS, (b) to examine if dissociative copings strategies and resilience predict STS above and beyond demographic and contextual factors and (c) to explore the mediation of resilience in the relationship between dissociative coping strategies and STS. Resilience was expected to mediate the relationship by reducing the effect of dissociative coping strategies on STS.

## Methods

### Participants

After excluding four participants not residing in Greece and two participants due to missing values as suggested by anomaly index, a sample of 222 nurses participated in the present study. The participants' mean age was 42.3 years; the majority of them were graduates of university nursing education, were working in public hospitals, and had contact with COVID-19 positive cases (see Table 1).

### Procedure

A descriptive correlational design was utilized. This study was conducted through an online survey during the period of the first lockdown in Greece (April 5–30, 2020), and it was approved by the Research Ethics Committee of the Hellenic Mediterranean University. Participants were recruited using a convenience and snowball mixed sampling procedure. All invitees completed the questionnaire online via google forms. The participants received a complete description of the survey and were asked to sign an online informed consent prior to data collection.

### Measures

The online survey demographic questions such as age, gender, marital status, number of children, education, work experience, and city of workplace were initially asked. A number of questions asked about nurses' experience with COVID-19 (i.e., whether they had contact with confirmed COVID-19 cases, level of self-efficacy of implementing the COVID-19 protocols). In addition, the following questionnaires assessed the study variables:

The Secondary Traumatic Stress Scale (STSS; [Bride et al., 2004](#)),

**Table 1**  
Sociodemographic characteristics of participants.

	N	%	
Marital status			
Married	137	61.7	
Singles	54	24.3	
Divorced	31	14.0	
Children			
Yes	145	65.3	
No	77	34.7	
Education			
Graduates of 2 years nursing education	53	23.9	
University	114	51.4	
Master/Doctoral	55	14.8	
Work experience			
Up to 5 years	38	17.1	
6–10 years	26	12.2	
11–15 years	54	24.3	
16–20 years	40	18.0	
21–25 years	31	14.0	
More than 26 years	32	14.4	
Workplace			
Public hospitals	143	64.4	
University hospitals	25	11.3	
Private hospitals	19	8.6	
Services of social welfare	16	7.2	
Primary health care	12	5.4	
Settings offering personalized services	7	3.2	
Contact positive COVID 19 cases			
Yes	152	31.5	
No	70	68.5	
	Range	M	SD
Age	23–65 years	42.3	9.83
Self-efficacy of implementing the COVID-19 protocols	1(not at all) – 5(a lot)	3.32	0.96

Note: N = Frequencies, M = Mean, SD = Standard Deviation.

consisting of 17 items, allocated in three subscales (Intrusions, Avoidance, and Hyperarousal), was used to measure the intensity of secondary stress experienced in the past 7 days. Items are scored on a five-point scale, ranging from 1 (never) to 5 (very often). The scale has been translated into the Greek language by [Kalaitzaki and Rovithis \(2021\)](#). The reliability (Cronbach's  $\alpha$ ) in the current sample was acceptable: STS total score = 0.91, Intrusion = 0.78, Avoidance = 0.78, and Arousal = 0.82.

The Brief COPE (Coping Orientation to Problems Experienced Inventory; [Carver, 1997](#)), consisting of 28 items, allocated in 14 subscales (i.e., Active coping, Planning, Use of emotional support, Use of instrumental support, Positive reframing, Acceptance, Religion, Humour, Venting, Denial, Substance use, Behavioral disengagement, Self-distraction, Self-blame), was used to assess coping strategies. Scales 1 through 8 are regarded adaptive coping strategies, whereas scales 9 through 14 are presumably maladaptive ([Meyer, 2001](#)). The participants indicated how often they were using each strategy to deal with COVID-19 pandemic, using a 4-point scale ranging from 0 (not at all) to 4 (very much). The Greek version of the scale has been validated by [Kapsou et al. \(2010\)](#). Reliabilities of the two subscales in the current sample were acceptable: adaptive coping  $\alpha = 0.80$  and maladaptive  $\alpha = 0.73$ .

The Brief Resilience Scale (BRS; [Smith et al., 2008](#)), consisting of six items was used to measure resilience as self-perceived ability to bounce back or recover quickly from stress. Responses were rated on a five-point Likert scale. The scale has been translated into the Greek language by [Kalaitzaki and Rovithis \(2021\)](#). The reliability in the current sample was acceptable ( $\alpha = 0.70$ ).

### Statistical analysis

[Bride's \(2007\)](#) thresholds were used for the interpretation of the STS (percentiles: 75th = 37.00, 90th = 43.80, 95th = 48.40), Intrusion (percentiles: 75th = 11.00, 90th = 12.00, 95th = 13.00), Avoidance (75th = 16.00, 90th = 20.00, 95th = 22.00) and Arousal scores (percentiles: 75th = 11.00, 90th = 14.00, 95th = 16.00). Independent samples *t*-tests were performed to test the differences on STS between the nurses who had contact with confirmed COVID-19 cases and those who had not. Four regression analyses were performed for the prediction of STS total score and its subscales (Intrusion, Avoidance, and Arousal) by sociodemographic variables, coping strategies, and resilience. All analyses with a *p*-value < .05 were considered significant and were performed with IBM SPSS v23. A mediation analysis was conducted as Structural Equation Model with AMOS v20, using Maximum Likelihood estimation method. The Expectation-Maximization imputation algorithm was used to estimate missing values. Direct effects included the relationships between the latent variables Resilience and STS, whereas indirect effects included the relationships between resilience and STS accounting for the latent variable of dissociative coping strategies. Parametric bootstrapping of standard errors across 2000 samples was used for the estimation of indirect effect. Model fit indices were assessed ([Hooper et al., 2008](#)): Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), and Incremental Fit Index (IFI) greater than 0.95, root mean square error of approximation (RMSEA) and standardized root-mean-square residual (SRMR) less than 0.08.

## Results

### Descriptive statistics

Table 2 presents means and standard deviations for the STS and its subscales, the 14 coping subscales, and resilience.

### Levels of STS

Regarding cut off scores ([Bride, 2007](#)), 146 (65.8 %) of the participants presented moderate to high scores on STS. Moreover, regarding

**Table 2**  
Descriptive statistics for STS, coping subscales and resilience.

Descriptive statistics	M	SD
STS Intrusion	13.75	4.62
STS Avoidance	17.24	5.65
STS Arousal	13.02	4.98
STS Total	44.00	13.93
COPE Self Distraction	5.33	1.49
COPE Active Coping	5.82	1.43
COPE Denial	3.95	1.56
COPE Substance Use	2.29	0.90
COPE Use Emotional Support	4.82	1.75
COPE Use Instrumental Support	4.79	1.79
COPE Behavioral Disengagement	2.69	1.11
COPE Venting	4.38	1.34
COPE Positive Reframing	6.21	1.39
COPE Planning	6.12	1.50
COPE Humour	4.38	1.46
COPE Acceptance	6.26	1.37
COPE Religion	4.51	1.91
COPE Self Blame	3.86	1.41
Resilience	21.29	4.02

Note: M = Mean, SD = Standard Deviation.

STS's dimensions 150 (67.6 %) presented moderate to high scores on Intrusions, 116 (52.3 %) presented moderate to high scores on Avoidance and 133 (59.9 %) presented moderate to high scores on Arousal.

*Contact with confirmed COVID-19 cases and STS*

Compared to the 70 participants who did not had contact with Confirmed COVID-19 cases, the 152 participants who had contact demonstrated significantly higher scores on Intrusion  $t(220) = 2.19, p = .030, d = 0.32$ , and a tendency for higher scores on the overall STS scale  $t(220) = 1.80, p = .074, d = 0.26$ . There were neither statistically significant difference for Avoidance  $t(220) = 1.30, p = .195, d = 0.19$  nor for Arousal  $t(220) = 1.52, p = .129, d = 0.22$ .

**Table 3**  
Hierarchical regression analysis for predicting STS and its subscales by socio-demographic and contextual factors, coping strategies and resilience.

	STS		Intrusion		Avoidance		Arousal	
	Final step ( $\Delta R^2$ )	$\beta$	Final step ( $\Delta R^2$ )	$\beta$	Final step ( $\Delta R^2$ )	$\beta$	Final step ( $\Delta R^2$ )	$\beta$
Gender								
Age								
Marital status	1(0.03)	0.17**	1(0.05)	0.23***			1(0.02)	0.15**
Children								
Work Experience					2(0.02)	0.07 <sup>ns</sup>		
Self efficacy procedures COVID-19	2(0.08)	-0.21***	2(0.03)	-0.16**	1(0.07)	-0.19***	2(0.10)	-0.25***
Specialization								
Work in the capital								
Self Distraction	4(0.07)	0.28***	4(0.06)	0.28***	4(0.05)	0.22***	4(0.07)	0.31***
Active Coping								
Denial	3(0.24)	0.40***	3(0.18)	0.36***	3(0.23)	0.40***	3(0.18)	0.36***
Substance Use								
Use Emotional Support								
Use Instrumental Support								
Behavioral Disengagement								
Venting								
Positive Reframing							5(0.02)	-0.13*
Planning								
Humour								
Acceptance								
Religion								
Self Blame			5(0.02)	0.19**				
Resilience	5(0.02)	-0.14*	6(0.02)	-0.16**	5(0.02)	-0.16**		
R <sup>2</sup>	0.45		0.38		0.39		0.39	

Note <sup>ns</sup> not statistically significant. For marital status 0 is for single and 1 for married.  
\*  $p < .05$ .  
\*\*  $p < .01$ .  
\*\*\*  $p < .001$ .

*Regression analyses*

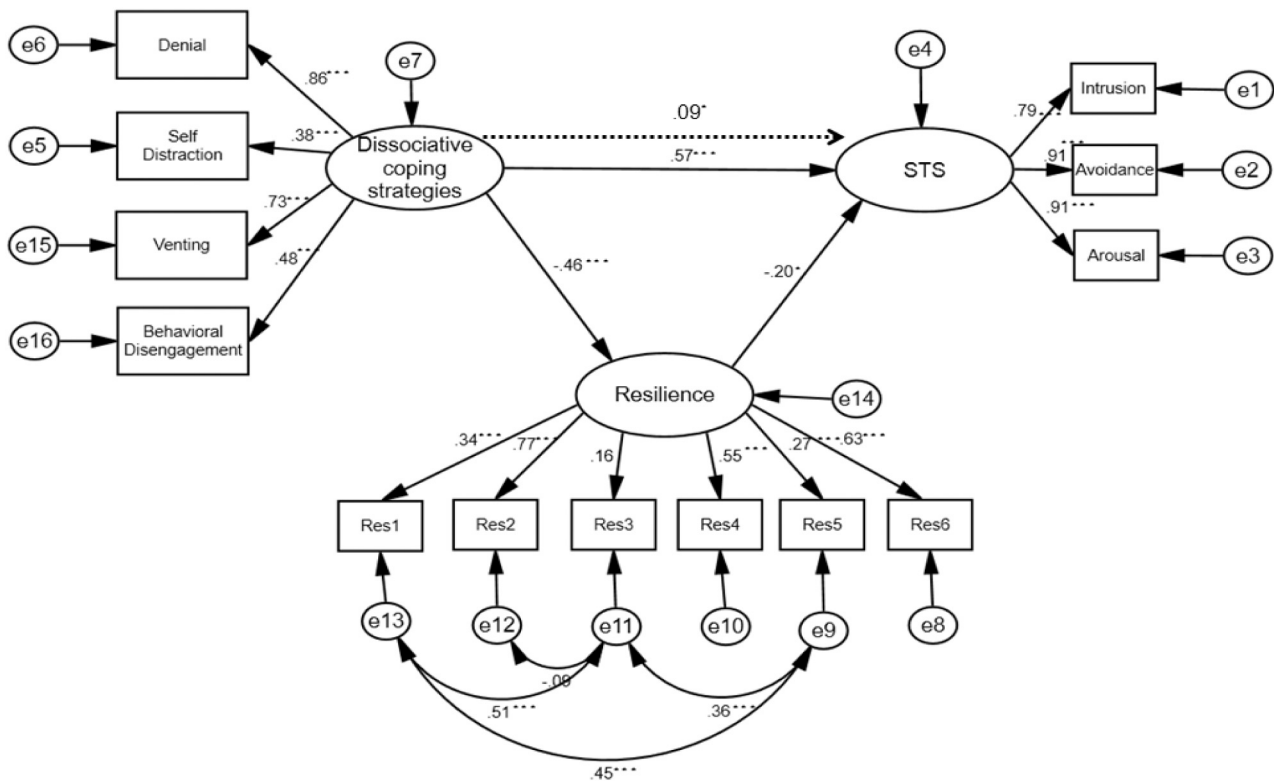
A series of hierarchical multiple regression analyses (using the stepwise method) were performed in order to investigate whether socio-demographic and contextual factors would predict STS and its subscales (see Table 3). In step 1, the demographic variables (gender, age, marital status, children) were introduced, in step 2 the contextual variables (work experience, specialization, working in the capital of Greece, contact with confirmed COVID-19 cases and self-efficacy of implementing the COVID-19 protocols) were introduced, and in step 3 the subscales of coping and resilience were introduced. Self-efficacy in implementing the COVID-19 protocols (inversely), denial, and self-distraction predicted STS total score and all three subscales (Intrusion, Avoidance, and Arousal). Marital status, with married people showing higher scores, predicted STS total score, Intrusion, and Arousal. Resilience negatively predicted STS total score, Intrusion, and Avoidance. Positive reframing inversely predicted Arousal but no other STS score (see Table 3).

*Mediation analysis*

A Structural Equation Model was conducted to test the mediating effect of resilience in the relationship between dissociative coping strategies and STS. The model demonstrated acceptable model fit:  $CMIN = 88.63, df = 58, p = .013; CFI = 0.97; IFI = 0.98; TLI = 0.97; RMSEA = 0.05 (LO = 0.02, HI = 0.07); SRMR = 0.06$ . Resilience partially mediated the dissociative coping - STS relationship. Coefficient for direct effect was 0.57,  $p < .001$  and for indirect effect was 0.09,  $p < .05$ . In Fig. 1 the model and the standardized path coefficients are presented.

**Discussion**

Nurses are a vulnerable population subgroup who experience persistent and enduring challenges that disturb their working functioning and ability, especially during the COVID-19 outbreak. In line



CMIN=84.630, DF=58, CFI=.974, TLI=.965, IFI=.975, RMSEA=.046,

Fig. 1. Mediating effects of resilience in the relationship between dissociative coping strategies and Secondary Traumatic Stress. Note \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ; Dotted lines refer to indirect effects.

with other findings (Marzetti et al., 2020), Greek nurses exhibited high levels of overall STS, and more specifically, moderate levels of avoidance and arousal symptoms and extremely high levels of intrusion symptoms. Nurses who were in frequent contact with confirmed COVID-19 patients showed more intrusion problems and a tendency for higher overall STS scores, compared to the rest of the nurses. This finding is in keeping with results of previous studies in healthcare professionals during the current pandemic (Kalaitzaki & Rovithis, 2021; Lai et al., 2020; Marzetti et al., 2020).

The examination of the predictors of STS provided interesting findings. Consistent with Von Rueden et al. (2010) findings, both personal and contextual variables were associated with STS. Married nurses also showed higher overall STS, Intrusion, and Arousal scores. Our results regarding marital status, are in accordance with relevant findings (Zhang et al., 2021). It might be that married healthcare workers, particularly the frontline ones, are more considerate not to say stressed and frightened of the likelihood of transmitting the virus to their loved ones. Self-distraction and denial were the most significant predictors of STS and its dimensions. This finding is in line with other studies on the effect of coping strategies on STS before the pandemic (Akinsulure-Smith et al., 2018; Hosaini & Ariapooran, 2014; Kellogg et al., 2018). Self-blame predicted intrusion symptoms. Self-Blame was strongly and positively associated with intrusion in trauma-related situations (Berman et al., 2018) and might enhance a feedback process of rumination that sustains intrusion.

The proposed model of the relationship between dissociative strategies and STS was confirmed by regression and SEM model. Consistent with our hypothesis, coping strategies associated with maintaining dissociation functions appear to be strongly associated with STS. This is both theory and data-driven, as it was based on the theories of trauma therapies (Foa et al., 2007; Schwarz et al., 2016; Shapiro, 2017) and the findings of this study confirmed the relationship between dissociation

processes (operated through the dissociative coping strategies) and STS. Resilience, as also expected, predicted inversely STS, which is in line with previous studies (Foster et al., 2019; Maiorano et al., 2020; McGarry et al., 2013; Yu et al., 2019). Furthermore, it was shown that resilience functions as a protective factor against the impact of dissociative coping strategies on STS. The more available resources (resilience), the weaker the relationship between maladaptive (dissociation-focused) coping strategies and STS. Therefore, the analysis reveals the protective role of resilience in the robust relationship between dissociative coping and STS. The aim should be both to enhance the psychological resilience of nurses and to reduce the use of dissociative coping strategies in order not to be at risk for developing STS.

It is plausible that a number of limitations may have influenced the results of this study. The first is that a convenient sample limits the generalizability of the findings. No definite conclusions regarding the effect of gender on the STS can be drawn since the sample mostly comprised of women. The web-based questionnaire survey is another limitation. A web-based questionnaire requires some basic IT skills, however, since nurse practitioners are familiar with health information systems, we do not consider it to be a significant limitation for our study. Furthermore, Ekman et al. (2006) concluded that the bias associated with collecting information using web questionnaires was not greater than that of the paper questionnaires. Another limitation is that this was cross-sectional study. A longitudinal study would have allowed for a better interpretation of the phenomena, such as the development and the maintaining of symptoms of secondary trauma in nurses. Future research should examine the convergent validity of the proposed dissociative coping strategies and their predisposing, precipitating and maintaining role on STS.

Despite its limitations, this study expanded our knowledge by providing insights on the risk and protective factors that are associated with nurses' STS. The findings of the present study also have important

implications for the development of prevention programs and workplace mental health interventions for preventing post and peri-traumatic symptoms and dealing with secondary traumatization in healthcare professionals. Since avoidance/denial is a common response to trauma/traumatic experiences at the workplace and seeking help for psychological problems has been associated with stigma in many communities, interventions should be made even more public and widely accessible (Kaye-Kauderer et al., 2021). Such interventions should target at addressing the trauma-related factors (e.g., dissociative strategies) that jeopardize healthcare workers' ability to provide effective care (Sabo, 2006), their mental health (i.e., STS), and internal assets (e.g., resilience). At the same time interventions should also activate or enhance protective factors, such as personal resources (e.g., resilience), help healthcare workers reprocessing stressful events and use of the most effective and functional long-term coping strategies to protect their mental health (Tarquinio et al., 2020; Tsouvelas et al., 2019) and mitigate or prevent the development of STS. Given the social distancing measures, digital interventions and tele-interventions could be effective during the COVID-19 pandemic, as suggested by Peiró et al. (2020). Acknowledging the risk and protective factors early enough will safeguard nurses, reduce the risk of STS morbidity, and potentially enhance their working abilities and promote their personal growth (Kalaitzaki, 2021; Kalaitzaki & Rovithis, 2021). These will ensure positive outcomes for the professionals, the patients, and the care they provide.

#### Author's contribution

GT contributed to the conception and design of the manuscript, literature search, writing of the manuscript and approval of the final version.

AK contributed to the conception and design of the manuscript, literature search, writing of the manuscript and approval of the final version.

AT contributed to the literature search, drafted and approved the final manuscript.

MR contributed to the literature search and approval of the final version.

GK contributed to literature search, writing of the manuscript and approval of the final version.

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