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Work-related predictors of mental health, presenteeism, and professional quality of life following exposure to a potentially traumatic event in child protection workers

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ABSTRACT

Background: Exposure to potentially traumatic events (PTEs) at work can have a negative impact on the psychological health and work life of child protection workers (CPWs). The most common form of work-related PTE experienced by CPWs consists of aggressive behaviours from the youths or their parents.

Objective: This study aims to identify modifiable work-related variables that might influence the probability of experiencing impaired mental health and professional adjustment following a PTE.

Method: The participants were CPWs from two youth social services organizations in Canada. A survey was administered to CPWs within one month of a work-related PTE (Time 1; $n = 176$), two months after the PTE (Time 2; $n = 168$), six months after the PTE (Time 3; $n = 162$), and 12 months after the PTE (Time 4; $n = 161$). Lagged linear mixed models allowed for the independent variables measured at Time 1, Time 2, and Time 3 to predict the outcome variables as measured on the next assessment (Time 2, Time 3, and Time 4, respectively). The outcomes of interest were insomnia symptoms, depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms, as well as presenteeism (inadequate work performance) and professional quality of life.

Results: Confidence in one's own ability to cope with service user aggression negatively predicted depressive, anxiety, and post-traumatic stress symptoms as well as presenteeism, and positively predicted professional quality of life. The perception of job safety negatively predicted depressive, anxiety, and post-traumatic stress symptoms, and positively predicted professional quality of life. Finally, psychological demands from work positively predicted all mental health outcomes as well as presenteeism, and negatively predicted professional quality of life.

Conclusions: This study identified work-related variables that could be modified in an attempt to prevent the negative impacts of exposure to work-related PTEs, especially, aggressive behaviours from the service users.

HIGHLIGHTS
• Modifiable work-related variables – self-efficacy, the perception of job safety, and psychological demands from work – predict mental health variables and professional adjustment following exposure to a potentially traumatic event in child protection workers.

Predictores de salud mental relacionados con el trabajo, presentismo y calidad de vida profesional tras la exposición a un evento potencialmente traumático en trabajadores de protección de la infancia

Antecedentes: La exposición a eventos potencialmente traumáticos (PTEs por sus siglas en inglés) en el trabajo pueden tener un impacto negativo en la salud psicológica y la vida laboral de trabajadores dedicados a la protección de la infancia (CPWs por sus siglas en inglés). La forma más común de PTE relacionada con el trabajo experimentada por los CPWs consiste en comportamientos agresivos de los niños, niñas y adolescentes o sus padres.

Objetivo: El estudio pretende identificar variables modificables relacionadas con el trabajo que puedan influir un deterioro de la salud mental y en el ajuste laboral posterior a una PTE.

Método: Los participantes fueron CPWs de dos organizaciones de servicios sociales para niños, niñas y adolescentes en la provincia de Quebec, Canadá. Una encuesta fue administrada a los CPWs un mes posterior a un PTE relacionado con el trabajo (Tiempo 1; $n = 176$), 2 meses posterior a la PTE (Tiempo 2; $n = 168$), seis meses posterior a la PTW (Tiempo 3; $n = 162$) y 12 meses posterior a la PTE (Tiempo 4; $n = 161$). Los modelos mixtos lineares desfasados permitieron que las variables independientes medidas en Tiempo 1, Tiempo 2 y Tiempo 3 predijeran las variables de resultado medidas en la siguiente evaluación (Tiempo 2, Tiempo 3 y Tiempo 4, respectivamente). Los resultados de interés fueron síntomas de insomnio, síntomas depresivos, síntomas ansiosos, y síntomas de estrés postraumático, así como presentismo (rendimiento laboral inadecuado) y calidad de vida profesional.

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Resultados: La confianza en la propia capacidad de lidiar con la agresión de un usuario predijo negativamente la depresión, la ansiedad y los síntomas de estrés postraumático así como el presentismo, y predijo positivamente la calidad de vida profesional. La percepción de seguridad en el trabajo predijo negativamente síntomas depresivos, ansiosos y postraumáticos, y predijo positivamente la calidad de vida profesional. Finalmente, las demandas psicológicas del trabajo predijeron positivamente todos los resultados de salud mental así como el presentismo, y negativamente la calidad de vida.
Conclusiones: Este estudio identificó variables relacionadas con el trabajo que pudiesen ser modificadas en un intento de prevenir los impactos negativos de los PTEs laborales, especialmente comportamientos agresivos de los usuarios del servicio.

儿童保护工作者接触潜在创伤事件后心理健康, 出勤主义和职业生活质量的工作相关预测因素

背景: 在工作中接触潜在创伤性事件 (PTE) 会对儿童保护工作者 (CPW) 的心理健康和工作生活产生负面影响。CPW 最常见的与工作相关的 PTE 形式包括来自青少年或其父母的攻击性行为。
目的: 本研究旨在确定可能会影响 PTE 后体验到受损心理健康和专业调整可能性的可修改的工作相关变量。
方法: 参与者是来自加拿大魁北克省两个青年社会服务组织的 CPW。在工作相关 PTE 后一个月内 (时间 1; *n*= 176), PTE 后两个月 (时间 2; *n*= 168), PTE 后六个月 (时间 3; *n*= 162) 以及 PTE 后 12 个月 (时间 4; *n*= 161) 对 CPW 进行了一项调查。滞后线性混合模型允许在时间 1, 时间 2 和时间 3 测量的自变量预测下一次评估 (分别为时间 2, 时间 3 和时间4) 测量的结果变量。感兴趣的结果是失眠症状, 抑郁症状, 焦虑症状和创伤后应激症状, 以及出勤主义 (工作表现不佳) 和职业生活质量。
结果: 对自己应对服务用户攻击能力的信心负向预测抑郁, 焦虑和创伤后应激症状以及出勤主义, 正向预测职业生活质量。工作安全感负向预测抑郁, 焦虑和创伤后应激症状, 正向预测职业生活质量。最后, 工作中的心理需求正向预测所有心理健康结果以及出勤主义, 负向预测职业生活质量。
结论: 本研究确定了可修改的工作相关的变量, 以防止暴露于工作相关 PTE 的负面影响, 尤其是服务用户的攻击性行为。

1. Introduction

Exposure to potentially traumatic events (PTEs), such as aggressive behaviours from the service users (i.e. the youths and their parents), is a pervasive issue for child protection workers (CPWs). In general, aggression at work refers to behaviours perpetrated by individuals from outside or inside an organization that are intended to cause physical or psychological harm to a worker (Barling, Dupré, & Kelloway, 2009). While the prevalence estimates of service user aggression towards CPWs vary widely across studies, both physical and psychological aggression is common (for a review, see Robson, Cossar, & Quayle, 2014). For instance, in a survey conducted with 586 CPWs from 10 youth social service organizations in Quebec (Canada), 54% of the respondents had been the victim of physical aggression (e.g. spiting, punching, biting, hair pulling) committed by a child/adolescent in the previous year (Geoffrion & Ouellet, 2013). The youths' parents can also perpetrate aggression in the form of threats, aggravated complaints, or physical assaults (Littlechild et al., 2016). The consequences of workplace aggression have been documented in child protection settings (Lamothe et al., 2018; Robson et al., 2014; Smith, Colletta, & Bender, 2017) and in healthcare organizations (Lanctôt & Guay, 2014; Zhang, Zheng, Cai, Zheng, & Liu, 2021). These consequences include physical injuries, psychological symptoms (e.g. sleep disturbances, depressive symptoms, anxiety symptoms), and in more severe cases, clinical levels of post-traumatic stress symptoms. Exposure to aggression in these organizations can also decrease job satisfaction, reduce the quality of cares and services, and increase turnover intention (Lamothe et al., 2018; Lanctôt & Guay, 2014; Robson et al., 2014; Smith et al., 2017; Zhang et al., 2021). In the light of these findings, there is a need to identify variables that can influence the risk of experiencing negative outcomes following exposure to PTEs in CPWs, in particular, aggressive behaviours. Work-related variables, including organizational variables, are of special interest since they offer opportunities for action (Olff et al., 2019).

Job demands (e.g. workloads), low job control, and low social support in the workplace might influence the negative outcomes of work-related PTEs in CPWs. Karasek's (1979) job demand-control (JDC) model, and the subsequent addition of a social support dimension (JDCS model; Johnson & Hall, 1988) have been extensively studied. Overall, studies that tested these models reported an additive effect of the proposed variables, whereas high mental strain (i.e. high job demands and low job control) and high iso-strain (i.e. high job demands, low job control, and low social support at work) are associated with a poorer mental health and lower job satisfaction (for reviews, see

Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Van der Doef & Maes, 1999). These variables might be particularly influential in the acute phase following a work-related PTE (Lamothe, Boyer, & Guay, 2021; Litz & Maguen, 2007). For instance, CPWs can benefit from the support of their colleagues or supervisor following exposure to a work-related aggression (Lamothe et al., 2018; Lamothe, Geoffrion, Couvrette, & Guay, 2021; Littlechild, 2005b). It is also worth noting that CPWs regularly face high workloads, and many child protection agencies report elevated turnover rates, which puts additional pressure on the remaining workers (Kim & Kao, 2014; McFadden, Campbell, & Taylor, 2015). Overall, social workers in the field of child welfare experience greater job demands (i.e. work overload and role conflict) compared with social workers in other fields (Kim, 2011).

Beyond the JDCS model, qualitative studies with CPWs (Lamothe et al., 2018; Littlechild, 2005a, 2005b; Littlechild et al., 2016; Smith et al., 2017) have allowed to identify two other variables that may influence the consequences of exposure to workplace aggression: low self-efficacy (i.e. the perceived ability to avoid- or cope with service user aggression); and a perception that the work is unsafe, or that work safety is not valued by the co-workers, the immediate superior or the organization. These two variables can foster fear towards future violent events at work and an accompanying sense of vulnerability, which can take the form of a debilitating psychological symptom (Lamothe et al., 2018; Littlechild, 2005a, 2005b; Littlechild et al., 2016; Smith et al., 2017). Notably, the perceived likelihood of future violent events at work – a construct similar to perceived work safety – is also linked to fear, both theoretically and empirically (LeBlanc & Kelloway, 2002; Mueller & Tschan, 2011). In addition to being a psychological symptom, fear towards future violent events at work mediates the relationship between the extent of prior exposure to workplace aggression and negative emotional outcomes or turnover intention in healthcare workers (Akbolat, Sezer, Ünal, Amarat, & Durmuş, 2019; Barling, Rogers, & Kelloway, 2001; Schat & Kelloway, 2000); similar mediation studies in CPWs are lacking. Other studies specific to CPWs further support the potential negative effects of low self-efficacy and unfavourable perceptions pertaining to work safety. In particular, low self-efficacy may be integrated into the professional identity of these workers, resulting in compassion fatigue and psychological distress (Geoffrion, Morselli, & Guay, 2016). Moreover, in CPWs, unfavourable perceptions pertaining to organizational safety are positively associated with emotional exhaustion (Vogus, Cull, Hengelbrok, Modell, & Epstein, 2016), whereas safety concerns in relation to home visits (aggregated scores within local departments) are negatively associated with organizational commitment (Kim & Hopkins, 2015).

The objective of the present study was to test the unique contribution of modifiable work-related variables in predicting mental health and professional adjustment over a one-year period following a work-related PTE (mainly, service user aggression) in CPWs. Specifically, the dependent variables are as follows (see Table 1 for more details): mental health variables (i.e. insomnia symptoms, depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms), presenteeism (i.e. inadequate work performance), and professional quality of life. These dependent variables were chosen since mental health and professional adjustment can be altered by workplace aggression (Lamothe et al., 2018; Lanctôt & Guay, 2014; Robson et al., 2014; Smith et al., 2017; Zhang et al., 2021). The modifiable work-related variables used as predictors are as follows (see Table 1 for more details): the perceived likelihood of future violent events at work; self-efficacy (i.e. the workers' confidence in their ability to cope with service user aggression); perceptions pertaining to work safety (i.e. how safe the work is perceived to be [job safety], and the extent to which safety is perceived to be valued by colleagues [co-worker safety], the immediate superior [supervisor safety], and the organization [safety management practices]); the three dimensions of the JDCS model, namely, job demands (i.e. psychological demands from work), job control (i.e. decision latitude), and social support at work (i.e. co-worker support and supervisor support). Based on previous research, it was expected that the perceived likelihood of future violent events at work and the psychological demands from work would positively predict the mental health outcomes (i.e. the severity of insomnia symptoms, depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms) as well as presenteeism, and negatively predict professional quality of life. All the other modifiable work-related variables – self-efficacy, job safety, co-worker safety, supervisor safety, safety management practices, decision latitude, co-worker support, and supervisor support – were expected to negatively predict the mental health outcomes as well as presenteeism, and positively predict professional quality of life.

To ensure the validity of the results, potentially confounding variables were included in the analyses (see Table 1). Sociodemographic variables that correlate with post-traumatic stress symptoms in populations of primary trauma victims were used as confounding variables, namely, sex and relationship status (for a review, see Sayed, Iacoviello, & Charney, 2015). The extent of exposure to aggression at work during the past year was also used as a confounding variable. This variable predicted general distress in a prospective study with healthcare workers who had been recently exposed to a work-related aggression

Table 1. Summary of the variables used in the analyses.

Variables	Scale	Number of items (subscales)	Score used in the analyses	Cut-off score
		Outcome variables		
Insomnia symptoms	Insomnia Severity Index (ISI; Bastien et al., 2001)	7 items (no subscale)	Total score	≥ 11 (high severity)
Depressive symptoms	Beck Depression Inventory (BDI; Beck et al., 1996)	21 items (no subscale)	Total score	≥ 20 (moderate or severe symptoms)
Anxiety symptoms	Beck Anxiety Inventory (BAI; Beck & Steer, 1993)	21 items (no subscale)	Total score	≥ 16 (moderate or severe symptoms)
Post-traumatic stress symptoms	Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013)	20 items (4 subscales)	Total score on the full questionnaire	≥ 31 (high severity)
Presenteeism (inadequate work performance)	Health and Work Performance Questionnaire (HPQ; World Health Organization, 2002).	5–7 items (2 optional items; no subscale)	Mean score on all answered items	N/A
Professional quality of life	Professional Quality of Life scale (ProQOL; Geoffrion et al., 2019)	30 items (3 subscales)	Total score on the full questionnaire	N/A
		Modifiable work-related variables		
Perceived likelihood of future violent events at work	Likelihood of Future Violent Events at Work Scale (LFVEWS; Leblanc, 2000)	13 items (no subscale)	Total score	N/A
Self-efficacy	Confidence in Coping with Patient Aggression Instrument (CCPAI; Thackrey, 1987)	10 items (no subscale)	Total score	N/A
Perceptions pertaining to work safety: 1) job safety 2) co-worker safety 3) supervisor safety 4) safety management practices	Work Safety Scale (WSS; Hayes et al., 1998)	50 items (5 subscales; only the first four subscales are used)	Total score on each of the four subscales	N/A
Dimensions of the job demand-control-support model: 1) psychological demands from work 2) decision latitude 3) co-worker support 4) supervisor support	Job Content Questionnaire (JCQ; Niedhammer et al., 2006)	26 items (4 subscales)	Total score on each of the four subscales	N/A
		Confounding variables		
Sex; relationship status; work status; professional experience	Questions developed by the research team to assess socio-demographic and work variables.	N/A	N/A	N/A
Extent of exposure to physical and psychological aggression at work during the past 12 months	Perception of Prevalence of Aggression Scale (POPAS; Geoffrion et al., 2017)	15 items (3 subscales; the "aggression against oneself" subscale is not used)	Total score on the "verbal" and "physical" aggression subscales	N/A

(Lamothe et al., 2021). Notably, while the extent of prior exposure to aggression can be conceptualized as a job demand based on the JDC model (e.g. Viotti, Gilardi, Guglielmetti, & Converso, 2015), it did not constitute a variable of interest in the present study since it is not modifiable. Finally, given the focus of the study on modifiable work-related variables, controlling for fixed work-related variables appeared necessary. Thus, work status (i.e. full-time or part-time employment) and professional experience (number of years) were controlled for in the analyses.

2. Methods

2.1. Participants

CPWs who were exposed to a PTE were recruited from two youth social services organizations in the province of Quebec, Canada: the Montreal Youth Social Services – University Institute (MYSS-UI) and the Montérégie Youth Social Services (MYSS). The only inclusion criterion was recent exposure to

a PTE. Eligible PTEs were those for which the MYSS-UI workers had received peer support between 2005 and 2011, as documented in the first phase of this study (Bilodeau, Marchand, Berthelette, Guay, & Tremblay, 2014): (a) being the victim of a physical aggression (e.g. being punched, kicked, bitten, spat on, or thrown an object at), including intimidating bodily behaviours without physical contact (e.g. a service user angrily approaching with clenched fists); (b) being the victim of a verbal aggression (i.e. insults or threats) or repetitive verbal aggression (e.g. receiving several aggressive voice mails from a parent); (c) being the victim of a sexual assault with or without physical contact (e.g. exhibitionism), or receiving a threat of sexual assault; (d) witnessing aggression (i.e. a fight between service users, aggression against a co-worker, aggressive behaviours against objects or animals, self-harm, a suicide threat, a suicide attempt, or a death threat directed at a person who is not present); (e) learning about the confirmed or presumed suicide or homicide of a current or past user; or (f) being exposed to a highly distressing work-related event that does not

involve aggression. Experiencing aggression from a colleague or superior was not considered an eligible PTE since this study focuses on service user aggression.

A total of 249 workers contacted the research team or completed the contact authorization form. Eligibility was determined by the research coordinator during the first phone contact with the worker. Seventy-three workers were excluded for the following reasons: the worker did not answer the phone calls nor return them ($n = 24$), more than one month had elapsed since the PTE had occurred ($n = 30$), there was a lack of time or interest ($n = 14$), the reported event was not a PTE ($n = 3$; see criteria 'a' to 'f' in the preceding paragraph), or the worker planned on working elsewhere within the next year ($n = 2$). The remaining 176 workers were included in the study. Four assessments (Time 1 to Time 4) were conducted during the first year following the participants' PTE. The survey was administered within one month after the PTE (T1; mean = 18.48 days, SD = 10.29; $n = 176$), two months after the PTE (T2; mean = 2.04 months, SD = .28; $n = 168$), 6 months after the PTE (T3; mean = 5.99 months, SD = .33; $n = 162$), and 12 months after the PTE (T4; mean = 12.23 months, SD = .41; $n = 161$). The data from the participants who dropped out following the first assessment could not be used in the analyses (see the 'statistical analyses' section); therefore, the final sample is composed of 168 participants. Almost all of the PTEs for which the participants took part in the study (160/168, 95.2%) involved exposure to aggressive behaviours by the service users (criteria 'a' to 'e' in the previous paragraph). At T1, the vast majority of participants reported being clinical staff (156/168, 92.9%); the remaining 12 participants reported being administrative staff ($n = 6$) or technical staff ($n = 6$). Despite having more limited contacts with the service users compared with clinical personnel, non-clinical personnel also present a risk of exposure to PTEs such as aggressive behaviours. All participants, including the non-clinical personnel, fulfilled the criterion of recent exposure to a PTE.

Efforts were made to conduct the first assessment (T1) within one month (30 days) of the PTE. However, because the research team had limited control over the moment of completion of the online survey, 18 participants (10.7% of the sample) completed T1 after 30 days had elapsed since their PTE. For these 18 participants, the mean number of days between the PTE and the completion of the survey at T1 was 37.17 days (SD = 5.80). While the variance in the amount of time elapsed between the PTE and the completion of the first survey may have introduced inter-individual variability in the data at T1, this is not a major issue since the analyses do not focus on T1 specifically. Rather, the present study evaluates prospective relationships across time points, as will be discussed in the statistical analyses section.

2.2. Procedure

The study's protocol is described in detail elsewhere (Guay, Tremblay, Goncalves, Bilodeau, & Geoffrion, 2017). Ethical approval for conducting this study was obtained from the Research Ethics Board of the MYSS-UI (Ref. MP-CJM-IU-15-02), and all participants provided informed written consent before taking part in the study. Based on data collected at T1, the participants were divided into three naturally occurring groups: 1) workers from the MYSS-UI who had received – or planned on receiving peer support for their PTE, 2) workers from the MYSS-UI who had not received – and did not plan on receiving peer support, and 3) workers from the MYSS, where no peer-support programme was established. In the present study, the group was used as a potential confounding variable since the peer support intervention (offered at the MYSS-UI only) and usual institutional support (which varied slightly between the MYSS-UI and the MYSS) in relation to the PTE might have influenced the dependent variables.

A convenience sampling approach was used at the MYSS-UI and the MYSS. Specifically, the following recruitment strategies were used: emails promoting the study were sent to all employees with an institutional email address, advertisements were posted on the centres' intranet, posters were hung, and key actors involved in the intervention process (i.e. first line managers, members of the health and security department, and peer helpers) were invited to share information about the study. Workers who were interested in the study contacted the research team directly or filled out a contact authorization form with their immediate superior or their peer helper. The first telephone contact aimed at providing information about the study and assessing eligibility. Eligible workers were sent an email containing the consent form. After signing the consent form, the participant received a link towards the internet survey hosted on SurveyMonkey®. On each subsequent assessment (T2, T3, and T4), a new link to the internet survey was sent to the participants. A reminder email and phone call were done on each assessment when necessary. Data collection took place between November 2015 and November 2019.

2.3. Measures

A summary of all the variables used in the analyses, as well as the questionnaires that were used to assess these variables are presented in Table 1. These questionnaires are described in more details below.

2.3.1. Outcome variables

2.3.1.1. Insomnia severity index (ISI).
The ISI (Bastien, Vallières, & Morin, 2001) comprises seven items assessing the severity of insomnia during the past month. Participants evaluate the severity of their difficulty falling asleep, staying asleep, and waking up too early on a Likert scale ranging from 0 ('None') to 4 ('Very'). The participants also rate their sleep satisfaction on a scale from 0 ('Very satisfied') to 4 ('Very unsatisfied'). Finally, participants indicate how much their sleep problem interferes with their daily functioning, how noticeable their sleep problem is to others, and how worried or distressed they are about their sleep problem. The later three questions are answered on a Likert scale ranging from 0 ('Not at all') to 4 ('Very much') (Bastien et al., 2001). This questionnaire has been validated in French (Gagnon, 2012). A cut-off score of 11 was used to detect a level of severity suggesting the presence of a probable insomnia disorder (Morin, Belleville, Bélanger, & Ivers, 2011). In the present study, the Cronbach alpha for the ISI was .89 on average for T2, T3, and T4.

2.3.1.2. Beck depression inventory (BDI).
The BDI (Beck, Steer, & Brown, 1996) assesses the severity of 21 depressive symptoms during the past 2 weeks. The severity of each symptom is rated on a scale from 0 to 3. For each symptom, the degrees of severity are represented with statements. For example, for the symptom 'sadness', the response options are 0 ('I do not feel sad'), 1 ('I feel sad'), 2 ('I am sad all the time and I can't snap out of it'), and 3 ('I am so sad and unhappy that I can't stand it'). The following cut-off scores have been suggested: minimal or no depression (0–13), mild depression (14–19), moderate depression (20–28), and severe depression (29–63). The validated French version of the BDI was used in the present study (Beck et al., 1996). The Cronbach alpha for the BDI was .93 on average for T2, T3, and T4.

2.3.1.3. Beck anxiety inventory (BAI).
The BAI (Beck & Steer, 1993) assesses the severity of 21 anxiety symptoms during the past week. Examples of symptoms are 'numbness or tingling', 'nervous' and 'fear of losing control'. Response options range from 0 ('Not at all') to 3 ('Severely: I could barely stand it'). The following cut-off scores have been suggested: minimal or no anxiety (0–7), mild anxiety (8–15), moderate anxiety (16–25), and severe anxiety (26–63) (Beck & Steer, 1993). The validated French version of the BAI was used in the present study (Freeston et al., 1994). The Cronbach alpha for the BAI was .90 on average for T2, T3, and T4.

2.3.1.4. Post-traumatic stress disorder checklist for DSM-5 (PCL-5).
The PCL-5 (Weathers et al., 2013) assesses the experience of 20 post-traumatic stress disorder (PTSD) symptoms during the past month. It covers four PTSD symptom clusters, namely, intrusion symptoms, persistent avoidance, negative alterations in cognitions and mood, and hyperarousal. The participants indicate to which extent they have been bothered by each symptom on a Likert scale ranging from 0 ('Not at all') to 4 ('Extremely'). A cut-off score of 31 on the total score of the PCL-5 was used to detect a level of severity suggesting the presence of a probable PTSD (Weathers et al., 2013). The validated French version of the PCL-5 was used in the present study (Ashbaugh, Houle-Johnson, Herbert, El-Hage, & Brunet, 2016). The Cronbach alpha for the PCL-5 was .95 on average for T2, T3, and T4. The total score on the full scale was used in the analyses.

2.3.1.5. Presenteeism.
This variable was assessed with seven questions from the Health and Work Performance Questionnaire (HPQ; World Health Organization, 2002). These questions were translated into French by Statistics Canada – Canada's national statistical agency – in the context of the 2013 Canadian armed forces mental health survey (CFMHS). Specifically, item 'A9' (HPQ clinical trials version) of this scale comprises two questions measuring work performance (i.e. 'How often was your performance higher [lower] than most workers on your job?') and five questions measuring the frequency of work-related issues, including a lack of productivity, low work quality, and a difficulty concentrating. The two questions on work performance were made optional, as was the case in the CFMHS, to account for the possibility that some workers did not have co-workers doing the same job. The participants indicate the frequency of each work-related issue during the past four weeks on a scale from 1 ('All of the time') to 5 ('None of the time'). Responses on the negative items are reversed, so that a higher score indicates more presenteeism (Kessler et al., 2004; World Health Organization, 2002). The Cronbach alpha for this variable was .79 on average for T2, T3, and T4.

2.3.1.6. Professional quality of life (ProQOL).
The validated French version of the ProQOL (Geoffrion, Lamothe, Morizot, & Giguère, 2019) comprises three subscales. The Compassion Satisfaction subscale (10 items) measures the pleasure derived from being able to do the work well. The Burnout subscale (10 items) measures feelings of hopelessness and difficulties in dealing with work or in doing the job effectively. The Compassion Fatigue/Secondary Trauma subscale (10 items) measures the consequences of exposure to stressful events at work. The participants indicate the frequency at which each statement applied to them in the last 30 days on a scale from 1 ('Never') to 5 ('Very

often'). After reversing negative items, the 30 items from the ProQOL load on a single factor reflecting professional quality of life (Geoffrion et al., 2019). This single 30-item factor was used in the analyses. In the present study, the Cronbach alpha for the full ProQOL was .93 on average for T2, T3, and T4.

2.3.2. Modifiable work-related predictors

2.3.2.1. Likelihood of future violent events at work scale (LFVEWS).
The LFVEWS (Leblanc, 2000) assesses the perceived likelihood of exposure to 13 types of violent events at work during the next year. Examples of items are: 'It is likely that I will be spat on or bitten while I'm at work' and 'It is likely that I will be sworn at while I'm at work'. Response options range from 1 ('Strongly disagree') to 7 ('Strongly agree') (Leblanc, 2000). This questionnaire was translated into French by the research team using Brislin's (1970) back-translation method. In the present study, the Cronbach alpha was .93 on average for T1, T2, and T3.

2.3.2.2. Confidence in coping with patient aggression instrument (CCPAI).
The CCPAI (Thackrey, 1987) comprises 10 items evaluating one's own ability, preparation, and comfort in intervening with aggressive patients. Examples of questions are: 'How comfortable are you in working with an aggressive patient?' and 'How good is your present level of training for handling psychological aggression?' Response options range from 1 to 11, with each question having its own anchor points (e.g. from 'Very uncomfortable' to 'Very comfortable', or from 'Very poor' to Very good") (Thackrey, 1987). This questionnaire was translated into French by the research team using Brislin's (1970) back-translation method. The term 'patient' was changed for 'user' to suit a sample of CPWs. In the present study, the Cronbach alpha was .93 on average for T1, T2, and T3.

2.3.2.3. Work safety scale (WSS).
The WSS (Hayes, Perandan, Smecko, & Trask, 1998) contains five subscales: job safety (WSS-I), co-worker safety (WSS-II), supervisor safety (WSS-III), management safety practices (WSS-IV), and satisfaction with the safety programme (WSS-V). Each subscale comprises 10 items. Response options are on a Likert scale from 1 ('Strongly disagree') to 5 ('Strongly agree'). Higher scores represent a greater perception of safety (Hayes et al., 1998). A total score was calculated for each of the first four subscales (the 'satisfaction with the safety programme' subscale was not used because some participants reported that their organization did not have such programme). This questionnaire was translated into French by the research team using Brislin's (1970) back-translation method. In the present study, the Cronbach

alphas for the four subscales varied between .88 and .91 on average for T1, T2, and T3.

2.3.2.4. Job content questionnaire (JCQ).
A validated 26-item French version of the JCQ (Niedhammer, Ganem, Gendrey, David, & Degioanni, 2006) was used to assess four constructs: psychological demands (nine items), decision latitude (includes skill discretion with six items and decision authority with three items), supervisor support (four items), and co-worker support (four items). Response options are on a Likert scale ranging from 1 ('Totally disagree') to 4 ('Totally agree') (Niedhammer et al., 2006). It is worth noting that the same French version of the JCQ has been validated with the addition of a 5-item physical demands subscale (31-item version; Niedhammer, 2002), and with the exclusion of the two social support subscales (18-item version; Brisson et al., 1998). In the present study, the Cronbach alphas for the four subscales varied between .73 and .91 on average for T1, T2, and T3.

2.3.3. Potentially confounding variables

2.3.3.1. Sociodemographic variables.
The survey contained questions on sociodemographic and work variables, four of which were used as confounding variables. The participants' age, sex, professional experience (number of years and days of experience as recognized by their employer), and level of education (highest degree obtained) were evaluated at T1, whereas marital status (single, in common law union, or married) and work status (i.e. working full time or part-time) were evaluated on each assessment. The participants' age and level of education are reported only to describe the sample and were not used in the analyses.

2.3.3.2. Perception of prevalence of aggression scale (POPAS).
The validated French version of the POPAS (Geoffrion, Giguère, Fortin, Fortin, & Guay, 2017) was used to assess the extent of exposure to aggressive behaviours in the workplace during the past 12 months. It comprises 15 items corresponding to forms of aggression manifested by the service users. The participants indicated the extent to which they have been confronted with each form of aggression on a Likert scale ranging from 1 ('Never') to 5 ('Very often'). The validated French version of the POPAS comprises three subscales, of which two possess adequate psychometric properties: verbal aggression (six items) and physical aggression (four items) (Geoffrion et al., 2017). In the present study, the Cronbach alphas at T1 were .80 and .77 for the verbal and physical subscales, respectively.

2.3.4. Statistical analyses

All analyses were performed with R. Linear mixed models were performed with the 'lme4' and 'lmerTest' packages (Douglas, Martin, Ben, & Steve, 2015; Kuznetsova, Brockhoff, & Christensen, 2017). In each model, the intercept was allowed to vary randomly. The analyses were conducted in two steps. In step 1, all the modifiable work-related variables were included as independent variables (IVs) in the models. In step 2, the potentially confounding variables were added as IVs in the models. The linear mixed models were time-lagged: the IVs at T1 predicted the dependent variables (DVs) at T2, the IVs at T2 predicted the DVs at T3, and the IVs at T3 predicted the DVs at T4. IVs that were measured at T1 only (i.e. group, sex, professional experience, as well as the POPAS's verbal aggression and physical aggression subscales) retained the same value at T2 and T3. Data collected at T4 for the IVs and data collected at T1 for the DVs were not used in the analyses. Linear mixed models consider the unique contribution of each predictor (i.e. the unique covariance between each predictor and the dependent variable), as is the case in traditional linear regression. This means that each prediction is adjusted for all other predictors included in the model.

The assumptions for using the linear mixed models were verified. The assumption of normality of the residuals was not respected for the linear mixed models predicting depressive symptoms (total score on the BDI), anxiety symptoms (total score on the BAI), and post-traumatic stress symptoms (total score on the PCL-5). A square root transformation was applied to these three dependent variables, which normalized the residuals. Table 2, Table 3 presents the results from the linear mixed models predicting the transformed variables. For transparency, the differences in the results when using the original (untransformed) variables are noted below Table 3.

The ProQOL has full missing data for some participants ($n = 20$ at T2, $n = 21$ at T3, and $n = 14$ at T4) since non-clinical personnel were instructed not to complete this questionnaire. The ISI, BDI, BAI, and the Presenteeism scale each have one missing data at T4 due to a participant who started taking the survey but stopped before completing it in full. There was no other missing data (e.g. due to item non-response) for any of the variables used in the analyses. No data imputation method was used.

3. Results

3.1. Descriptive statistics

Descriptive statistics are presented in Table 2. On the first assessment, the mean age of the participants was 34.27 (SD = 8.55) years old. Most participants were females (84.5%), worked full time (70.2%), and were either single (34.5%) or in a common-law relationship (50.6%). Regarding their level of education, the participants had a high-school diploma (1.8%), a university certificate (1.8%), a general and professional teaching college diploma (32.3%, this is a type of post-secondary institution called CEGEP in the province of Quebec, Canada; Fédération des cégeps, 2021, October), an undergraduate university degree (52.1%), or a graduate university degree (12.0%). On average, on T2, T3, and T4, 12.9% of the participants had moderate to severe depressive symptoms (BDI score ≥ 20), 14.3% had moderate to severe anxiety symptoms (BAI score ≥ 16), 41.6% experienced a severe level of insomnia symptoms (ISI total score ≥ 11), and 10.4% experienced a severe level of PTSD symptoms (PCL-5 total score ≥ 31).

3.2. Main results

Table 3 presents the linear mixed model for each of the six dependent variables, before (step 1) and after (step 2) controlling for potentially confounding variables. As a reminder, in these models, independent variables assessed at one time point predicted the dependent variables at the subsequent time point.

Some potentially confounding variables emerged as significant predictors (step 2). In particular, professional experience positively predicted insomnia symptoms, post-traumatic stress symptoms, and presenteeism. Moreover, the extent of prior exposure to verbal aggression from the service users during the past year (POPAS Verbal) negatively predicted professional quality of life. Regarding categorical variables, being married negatively predicted insomnia symptoms (participants who were single constituted the reference group) and belonging to the MYSS-UI group without peer support positively predicted professional quality of life (participants from the MYSS-UI who received peer support constituted the reference group). The other confounding variables were not significant predictors for any of the dependent variables: sex, work status, and the extent of prior exposure to physical aggression from the service users during the past year (PoPAS Physical).

Five modifiable work-related variables were not significant predictors for any of the dependent variables: the perceived likelihood of future violent events at work scale (LFVEWS), the perceived degree of care for safety in the co-workers (WSS-II), the perception of management safety practices (WSS-IV), supervisor support (JCQ), and co-worker support (JCQ).

Two modifiable work-related variables each predicted one or two dependent variables. The

Table 2. Descriptive statistics for Time 1 ($n = 168$), Time 2 ($n = 168$), Time 3 ($n = 162$) and Time 4 ($n = 161$).

	Time 1 n (%) / mean (SD)	Time 2 n (%) / mean (SD)	Time 3 n (%) / mean (SD)	Time 4 n (%) / mean (SD)
Confounding variables				
Professional experience	8.33 (6.12)	–	–	–
Sex				
Male	26 (15.5%)	–	–	–
Female	142 (84.5%)	–	–	–
Work Status				
Part time	50 (29.8%)	53 (31.5%)	47 (29.0%)	–
Full time	118 (70.2%)	115 (68.5%)	115 (71.0%)	–
Relationship status				
Single	58 (34.5%)	57 (33.9%)	63 (38.9%)	–
Common-law	85 (50.6%)	86 (51.2%)	76 (46.9%)	–
Married	25 (14.9%)	25 (14.9%)	23 (14.2%)	–
Group				
MYSS-UI peer support	33 (19.6%)	–	–	–
MYSS-UI no peer support	63 (37.5%)	–	–	–
MYSS	72 (42.9%)	–	–	–
PoPAS Verbal	19.30 (4.37)	–	–	–
PoPAS Physical	8.51 (3.20)	–	–	–
Modifiable work-related variables				
LFVEWS	60.68 (15.08)	62.30 (15.15)	61.76 (16.25)	–
CCPAI	60.01 (18.91)	59.66 (18.81)	60.99 (18.34)	–
WSS I	29.15 (6.81)	29.14 (6.99)	29.40 (7.92)	–
WSS II	36.38 (6.54)	35.75 (6.72)	36.02 (6.63)	–
WSS III	33.56 (6.92)	33.08 (6.81)	32.52 (7.56)	–
WSS IV	28.60 (6.46)	28.85 (6.69)	28.46 (7.11)	–
JCQ psychological demands	25.09 (4.44)	25.82 (4.24)	25.70 (4.47)	–
JCQ decision Latitude	27.57 (3.35)	27.48 (3.13)	27.78 (2.98)	–
JCQ supervisor support	11.93 (2.55)	11.87 (2.36)	11.76 (2.63)	–
JCQ co-worker support	13.13 (1.99)	13.17 (2.20)	13.21 (2.11)	–
Outcomes				
ISI	–	9.38 (6.09)	9.31 (6.08)	9.44 (6.01)
High severity	–	70 (41.7%)	65 (40.1%)	69 (43.1%)
BDI	–	10.14 (8.08)	10.09 (8.69)	9.84 (9.18)
Minimal	–	116 (69.0%)	115 (71.0%)	119 (74.4%)
Mild	–	33 (19.6%)	23 (14.2%)	21 (13.1%)
Moderate	–	14 (8.3%)	20 (12.3%)	14 (8.8%)
Severe	–	5 (3.0%)	4 (2.5%)	6 (3.8%)
BAI	–	7.38 (7.39)	8.13 (7.77)	7.29 (8.02)
Minimal	–	105 (62.5%)	97 (59.9%)	107 (66.9%)
Mild	–	41 (24.4%)	39 (24.1%)	31 (19.4%)
Moderate	–	17 (10.1%)	18 (11.1%)	13 (8.1%)
Severe	–	5 (3.0%)	8 (4.9%)	9 (5.6%)
PCL-5	–	12.77 (13.19)	12.27 (13.63)	11.98 (13.22)
High severity	–	17 (10.1%)	18 (11.1%)	16 (9.9%)
ProQOL[a]	–	113.41 (16.43)	113.52 (16.31)	113.12 (15.95)
Presenteeism (mean)	–	2.22 (0.65)	2.20 (0.73)	2.16 (0.79)

a. This questionnaire was administered to clinical workers only; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; CCPAI = Confidence in Coping With Patient Aggression Instrument; ISI = Insomnia Severity Index; JCQ = Job Content Questionnaire; LFVEWS = Likelihood of Future Violent Events at Work Scale; MYSS-UI = Montreal Youth Social Services centre – University Institute; MYSS = Montérégie Youth Social Services centre; PCL-5 = Post-Traumatic Stress Disorder Checklist for DSM-5; PoPAS verbal = Perception of Prevalence of Aggression Scale – verbal violence; PoPAS physical = Perception of Prevalence of Aggression Scale – physical violence; ProQOL = Professional Quality of Life; WSS-I = Work Safety Scale – job safety; WSS-II = Work Safety Scale – co-worker safety; WSS-III = Work Safety Scale – supervisor safety; WSS-IV = Work Safety Scale – management safety practices.

perceived degree of care for safety in the supervisor (WSS-III) positively predicted professional quality of life in steps 1 and 2. Decision latitude at work (JCQ) negatively predicted presenteeism and positively predicted professional quality of life in step 2 (i.e. after controlling for the potentially confounding variables), but not in step 1.

Finally, three modifiable work-related variables each predicted four or more dependent variables. The degree of confidence in one's own ability to cope with the service users' aggressive behaviours (CCPAI) negatively predicted depressive symptoms, anxiety symptoms, post-traumatic stress symptoms and presenteeism, and positively predicted professional quality of life. These effects remained significant after controlling for potentially confounding variables (step 2). The degree to which the job was perceived as being safe (WSS-I) negatively predicted depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms, and positively predicted professional quality of life. These effects remained significant after controlling for potentially confounding variables (step 2), except for the prediction of depressive symptoms, which became marginally significant. Finally, psychological demands from the work (JCQ) positively predicted all the mental health variables as well as presenteeism, and negatively predicted professional quality of life. These effects were maintained after controlling for potentially confounding variables (step 2). In summary, these three variables – CCPAI, WSS-I, and the psychological demands subscale of the JCQ – were the most important predictors.

Table 3. Time-lagged linear mixed models predicting mental health variables, presenteeism, and professional quality of life based on modifiable work-related variables (step 1) and potentially confounding variables (step 2).

	ISI		BDI square root		BAI square root		PCL-5 square root		Presenteeism		ProQOL	
IVs	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)	Step 1 (B)	Step 2 (B)
LFVEWS	.039†	.024	.005	.002	−.001	−.005	.003	−.005	−.001	−.003	.028	.069
CCPAI	−.014	−.026	−.012**	−.014**	−.014**	−.017**	−.013*	−.018**	−.008**	−.010**	.146**	.149**
WSS I	−.012	−.012	−.023*	−.022†	−.031**	−.031**	−.053**	−.05**	−.010	−.010	.43**	.417**
WSS II	−.089†	−.080†	−.016	−.012	−.010	−.008	−.011	−.007	−.001	<.001	.147	.125
WSS III	−.062	−.053	−.008	−.002	−.009	−.006	−.020	−.015	−.010	−.008	.291*	.277*
WSS IV	−.044	−.055	.001	−.001	.004	.003	.010	.006	.001	<.001	.076	.098
JCQ psychological demands	.169*	.175*	.079**	.077**	.055**	.053**	.081**	.077**	.026**	.025**	−.761**	−.713**
JCQ decision latitude	−.118	−.145	−.016	−.024	−.018	−.021	−.023	−.034	−.022†	−.025**	.446†	.509*
JCQ supervisor support	.089	.133	.005	.011	−.043	−.036	.010	.021	.018	.022	−.388	−.418
JCQ co-worker support	−.081	−.069	−.004	−.006	.010	.011	−.014	−.021	.034†	.035†	.287	.379
Sex												
Men (ref.)		−		−		−		−		−		−
Women		−1.052		−.180		−.134		.127		.005		−2.487
Relationship status												
Single (ref.)		−		−		−		−		−		−
Common law		−1.147†		−.173		−.052		−.158		.039		1.687
Married		−3.359**		−.520†		−.408		−.433		.021		3.095
Professional experience		.127*		.028†		.029†		.038*		.015*		−.28†
Work status												
Part time (ref.)		−		−		−		−		−		−
Full time		.504		−.158		−.061		−.185		.022		.115
Group												
MYSS-UI peer support (ref.)		−		−		−		−		−		−
MYSS-UI no peer support		−.908		−.069		−.105		−.374		−.023		6.743**
MYSS		−1.262		.327		−.026		.072		.038		3.850
PoPAS Verbal		.067		.042		.046		.063†		.011		−.678*
PoPAS Physical		.263		.024		.017		.090†		.025		.158

†*p* < .10; * *p* < .05; ** *p* < .01

When performing the analyses with the original (untransformed) variables for the BDI, the BAI, and the PCL-5, the same results emerged, with three exceptions: 1) for the BAI, in step 1, 'JCQ supervisor support' reached significance (*B* = −.297, *p* = .048; 2) for the BAI, in step 2, 'professional experience' reached significance (*B* = .162, *p* = .049); 3) for the PCL-5, in step 2, 'PoPAS Physical' reached significance (*B* = .718, *p* = .042).

BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; CCPAI = Confidence in Coping With Patient Aggression Instrument; ISI = Insomnia Severity Index; JCQ = Job Content Questionnaire; LFVEWS = Likelihood of Future Violent Events at Work Scale; MYSS-UI = Montreal Youth Social Services centre – University Institute; MYSS = Montérégie Youth Social Services centre; PCL-5 = Post-Traumatic Stress Disorder Checklist for DSM-5; PoPAS verbal = Perception of Prevalence of Aggression Scale – verbal violence; PoPAS physical = Perception of Prevalence of Aggression Scale – physical violence; ProQOL = Professional Quality of Life; Ref. = category of reference; WSS-I = Work Safety Scale – job safety; WSS-II = Work Safety Scale – co-worker safety; WSS-III = Work Safety Scale – supervisor safety; WSS-IV = Work Safety Scale – management safety practices.

4. Discussion

The objective of the present study was to test the unique contribution of modifiable work-related variables in predicting mental health and professional adjustment in the aftermath of exposure to a PTE. To do so, CPWs who were exposed to a PTE – mostly, service user aggression – were evaluated throughout a one-year period, including four data collection points. The prospective design allowed to conduct time-lagged analyses, whereas predictors measured at one time point predicted the outcome variables at the subsequent time point. This means that the observed relationships are predictive (prospective) rather than merely correlational (cross-sectional). Three main predictors emerged: the confidence in one's own ability to cope with service user aggression, the extent to which the job is perceived as being safe, and psychological demands. The following paragraphs address ways in which these results may inform best practices.

A greater confidence in one's own ability to cope with service user aggression predicted a lower severity of depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms, less presenteeism, and a better professional quality of life. These findings align with evidence supporting the central role of self-efficacy in post-traumatic recovery (Benight & Bandura, 2004). According to Laird (2014), academic training for educators should focus to a greater extent on dealing with service user aggression. It is suggested that educators should be better prepared to assert their professional authority, to work with service users presenting with a substance use disorder or another mental health disorder, and to understand their own emotional reactions in the face of aggression (Laird, 2014). Continuous professional training in aggression management techniques for workers might also be useful. While the effect of training on the number of episodes of aggression is uncertain (for a Cochrane review, see Geoffrion et al., 2020), it can positively influence the workers' confidence in coping with service user aggression (Heckemann et al., 2015; Price, Baker, Bee, & Lovell, 2015). It is also important to note

that exposure to aggression may impact on the worker's confidence. In that regard, post-incident supervision by the superior, which is sometimes lacking, can help the workers in assessing the appropriateness of their reaction and in determining the best ways of managing similar incidents in the future (Lamothe et al., 2018; Littlechild et al., 2016). Likewise, follow-up meetings with the superior in the days and weeks following the PTE, as well as ongoing clinical supervision have the potential to protect and even improve self-efficacy, assuming the worker has a positive relationship with the supervisor (Lamothe et al., 2021).

A greater perception of safety in relation to one's job predicted a lower severity of depressive symptoms, anxiety symptoms, and post-traumatic stress symptoms, and a better professional quality of life. One factor that might contribute to the CPWs feeling unsafe is a lack of trained personnel to supervise the youths and to intervene during crises. Indeed, in qualitative studies (Lamothe, Couvrette, et al., 2021; Lamothe, Couvrette, et al., 2018), some CPWs perceived that budget cuts and reduced personnel contributed to enabling dangerous situations. Furthermore, workers are likely to feel safer if they can expect support from their organization in the event of exposure to aggression. However, a pervasive attitude among workers and supervisors is that being verbally or physically assaulted is *part of the job*. This can result in the non-disclosure of aggression or in inadequate support from the superior in response to disclosure (Geoffrion & Ouellet, 2013; Hunt, Goddard, Cooper, Littlechild, & Wild, 2016; Lamothe et al., 2018). In that regard, the safety of CPWs should be considered a priority. When CPWs fear for their own safety or that of their family, many aspects of their work can be compromised, including their relationship with the children, their ability to challenge the children's caregivers, and their assessment of the children's safety (Lamothe et al., 2018; Littlechild et al., 2016; Robson et al., 2014). Moreover, fear for personal safety (or safety concerns) may contribute to the high turnover rates among CPWs (Ellett, Ellis, Westbrook, & Dews, 2007; Kim & Kao, 2014). In these conditions, child protection agencies cannot be expected to perform optimally. Lastly, it is worth noting that practical measures can be implemented to reduce the risk of exposure to aggression during home visits (Spencer & Munch, 2003).

Higher psychological demands from work predicted a greater severity of symptoms for all mental health outcomes, more presenteeism, and a lower professional quality of life. Likewise, in the literature, it is generally observed that the construct of psychological demands positively predicts psychological difficulties (for a meta-review, see Harvey et al., 2017). For CPWs, high psychological demands from work occur in the context of an inherently emotionally demanding job. Indeed, CPWs can experience compassion fatigue from

working with youths who have been exposed to (or who have perpetrated) traumatic events, in addition to being held accountable for decisions that determine these youths' future safety and well-being (Geoffrion et al., 2016). In that regard, exposure to high psychological demands and other stressors over the years may explain why professional experience positively predicted insomnia symptoms, post-traumatic stress symptoms and presenteeism in the present study. There is no universally effective organizational intervention to influence psychological demands and other psychosocial factors in the workplace. Indeed, any intervention must consider the particularities of the organization as well as its priorities. With a participatory approach, an intervention team composed of workers (e.g. CPWs, union representatives, managers) would be involved in identifying organizational challenges – including those fostering psychological demands – and in developing potential solutions (Brisson et al., 2020). A participatory intervention has been used in healthcare organizations with varying degrees of success in influencing psychological demands (e.g. Arapovic-Johansson et al., 2018; Bourbonnais, Brisson, & Vézina, 2011; Uchiyama et al., 2013), but it has not yet been tested in a child protection agency.

The absence of a significant relationship between supervisor support, co-worker support, and the outcome variables was an unexpected result. One possible explanation is that counter-supportive interactions with colleagues or the supervisor (e.g. trivialization, blame, critiques; not measured in the present study) are more influential than supportive interactions. For instance, in a cross-sectional study with healthcare workers who had been exposed to workplace violence in the past 12 months, perceiving a risk of being judged by colleagues or the superior if one complains about severe violence was positively associated with the number of post-traumatic stress symptoms; no association was found for co-worker support or employer support (Geoffrion, Goncalves, Boyer, Marchand, & Guay, 2017). Furthermore, the scale used to measure co-worker support and supervisor support in the present study (i.e. the Job Content Questionnaire) was not specifically developed for workers exposed to a PTE. Using a scale measuring social support and counter-supportive interactions in the workplace in relation to PTEs could provide more fine-grained data and a higher probability of predicting mental health variables and professional adjustment.

On average, between two months (T2) and 12 months (T4) following the PTE, 41.6% of the participants experienced a severe level of insomnia symptoms as indicated by a score of 11 or higher on the Insomnia Severity Index (Morin et al., 2011). Pre-sleep cognitive arousal, including worries and ruminations, constitutes one of the main

contributing factors to insomnia (Lemyre, Belzile, Landry, Bastien, & Beaudoin, 2020). As such, high workloads, a lack of experienced personnel due to a high turnover rate (Ellett et al., 2007; Kim, 2011; Kim & Kao, 2014), the responsibility for taking decisions impacting on the youths' safety (accountability stress; Geoffrion et al., 2016), and worries for the youths' well-being may constitute risk factors for the experience of sleep disturbances in CPWs (Griffiths, Harper, Desrosiers, Murphy, & Royse, 2019; Griffiths, Royse, & Walker, 2018). Exposure to aggressive behaviours from the service users likely constitutes an additional risk factor since it can foster fear for one's own safety at work (Lamothe et al., 2018; Littlechild et al., 2016; Robson et al., 2014), potentially increasing worries at bedtime. One strategy that might help improve the sleep of CPWs is to teach stress management strategies (e.g. relaxation exercises) and provide information on good sleep hygiene habits.

5. Limitations

The results of this study should be interpreted in the light of methodological limitations. First, while peritraumatic factors (e.g. trauma type, trauma severity) can predict the development of PTSD symptoms following a PTE in primary trauma victims (Sayed et al., 2015), such factors were not considered as potentially confounding variables in the present study. However, the type of trauma was mostly homogeneous since almost all PTEs involved exposure to aggressive behaviours perpetrated by a service user. Second, because the first assessment occurred on average 18 days following the PTE, the extent to which the PTEs influenced the modifiable work-related variables (i.e. the main predictors in the models) could not be tested. Third, the methodological design did not allow to determine whether the same predictive relationships would be observed in CPWs who have not recently experienced a PTE. Fourth, because the participants were not required to disclose their PTE to their immediate superior, the proportion of participants who received usual institutional support soon after the PTE is unknown. Therefore, the effect of usual institutional support could not be used as a potentially confounding variable in the analyses. Fifth, while the workers' confidence in their ability to cope with service user aggression and the extent to which they perceive the job as being safe were analysed separately in the present study, the underlying relationship between these constructs should be acknowledged. As discussed previously, exposure to aggression can reduce the workers' confidence in their ability to cope with aggression; this, in turn, can contribute to the perception that the job is unsafe. Sixth, a convenience sampling approach was used, which means that the sample is not representative of all CPWs exposed to a PTE in the context of their work. Finally, because self-reported measures were used, a social desirability bias as well as a recall bias may have occurred.

6. Conclusion

This study was successful in identifying modifiable work-related variables that predict psychological symptoms, presenteeism, and/or professional quality of life following a PTE in CPWs. These results shed light on courses of action that could be undertaken in an effort to favour the workers' preparation for- and adaptation to work-related PTEs. This may help child protection agencies fulfiling their responsibility to maximize the security of their employees and to help them cope with the consequences of PTEs at work. Secondarily, the results might help in identifying workers who are at increased risk of developing more severe psychological symptoms in the aftermath of a PTE.

Data availability statement

The consent form was approved in 2015 and did not mention the possibility that the participants' individual anonymized data be publicly available after the study. Therefore, the participants did not consent for their anonymized data to be shared in a repository. Consequently, the data for this study cannot be shared due to ethical reasons.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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