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Lifetime post-traumatic stress disorder in older individuals with a history of institutional upbringing in childhood: the role of social acknowledgement and stressful life events

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ABSTRACT

Background: Child maltreatment (CM), particularly in institutional contexts, can affect the development of post-traumatic stress disorder (PTSD). Research suggests that factors during CM (e.g. severity, variety, duration) and in the aftermath of CM (e.g. stressful life events, and social acknowledgement, i.e. the degree to which an individual feels validated and supported following a traumatic event) can explain some of the heterogeneity in PTSD development. However, there is a lack of research on long-term correlates of CM and mitigating factors, with only a few studies having been conducted with older survivors of institutional upbringing. Such research is relevant, given the long-term associations between CM and the older age status of many survivors.
Objective: The current study examined the link between CM and PTSD in older individuals with a history of institutional upbringing (risk group; RG) and a matched control group (CG). Differences in stressful life events and social acknowledgement were also investigated.
Method: Participants were n = 116 RG (M_{age} = 70.25 years, 41% female) and n = 122 CG (M_{age} = 70.71 years, 51% female). Data was assessed using self-report questionnaires and a clinical interview.
Results: The RG reported higher levels of exposure to CM. Lifetime PTSD showed a bigger association with the level of exposure to CM, compared to having an institutional upbringing. Participants with higher CM levels reported more stressful life events. High levels of social acknowledgement mediated the relationship between CM and PTSD in the CG.
Conclusions: Exposure to CM had a stronger association with PTSD than a history of institutional upbringing. In the CG, the survivors' perception of social acknowledgement ameliorated lifetime PTSD to a small extent. A critical issue for policy makers should be to enhance safeguarding measures against CM exposure, not only in institutional contexts, but also more generally, given the link to PTSD.

Trastorno de estrés postraumático durante la vida en personas mayores con antecedentes de crianza institucional en la niñez: el papel del reconocimiento social y los eventos vitales estresantes

Antecedentes: El maltrato infantil (MI), particularmente en contextos institucionales, puede incidir en el desarrollo del trastorno de estrés postraumático (TEPT). La investigación sugiere que los factores durante el MI (ej. gravedad, variedad, duración) y en el periodo posterior al MI (ej. eventos estresantes de la vida y reconocimiento social, es decir, el grado en que un individuo se siente validado y apoyado después de un evento traumático) pueden explicar en parte la heterogeneidad en el desarrollo del TEPT. Sin embargo, hay una falta de investigación sobre los correlatos a largo plazo del MI y los factores atenuantes, y solo se han realizado unos pocos estudios con personas mayores que han sobrevivido a la crianza institucional. Dicha investigación es relevante, dadas las asociaciones a largo plazo entre MI y el estado a mayor edad de muchos sobrevivientes.
Objetivo: El presente estudio examinó el vínculo entre MI y TEPT en personas mayores con antecedentes de crianza institucional (grupo de riesgo; GR) y un grupo de control emparejado (GC). También se investigaron las diferencias en los eventos vitales estresantes y el reconocimiento social.

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关键词
童年期虐待; 机构养育; 创伤后应激障碍; 社会认同; 压力性生活事件; 老年人。

HIGHLIGHTS

- In the present study individuals with a history of institutional upbringing reported high levels of child maltreatment.
- Furthermore, social acknowledgement was found to be meaningfully associated with post-traumatic stress disorders in child maltreatment survivors.

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Supplemental data for this article can be accessed here.

Método: Los participantes fueron *N* = 116 en GR (edad promedio = 70,25 años, 41% mujeres) y *N* = 122 en GC (edad promedio = 70,71 años, 51% mujeres). Los datos se evaluaron mediante cuestionarios de auto-reporte y una entrevista clínica.
Resultados: El GR reportó niveles más altos de exposición a MI. El TEPT durante la vida mostró una mayor asociación con el nivel de exposición a MI, en comparación con la crianza institucional. Los participantes con niveles más altos de MI reportaron más eventos vitales estresantes. Altos niveles de reconocimiento social mediaron la relación entre MI y TEPT en el GC.
Conclusiones: La exposición a MI tuvo una asociación más fuerte con el TEPT que el historial de crianza institucional. En el GC, la percepción de reconocimiento social de los sobrevivientes mejoró en pequeña medida el TEPT durante la vida. Una cuestión fundamental para los responsables de la formulación de políticas debería ser mejorar las medidas de protección contra la exposición a MI, no solo en contextos institucionales, sino también de manera más general, dado el vínculo con el trastorno de estrés postraumático.

具有童年机构养育史的老年人的终身创伤后应激障碍:社交认可和压力性生活事件的作用

背景: 童年期虐待 (CM), 尤其在机构环境中, 可能会影响创伤后应激障碍 (PTSD) 的发展。研究表明, CM期因素 (例如严重性, 多样性, 持续时间) 和CM后因素 (例如压力性生活事件和社会认可, 即个体在发生创伤事件后得到认可和支持的程度) 可以解释PTSD发展中的某些异质性。但是, 缺少关于CM与缓解因素长期相关性的研究, 只有少量研究在机构养育老年幸存者中进行。鉴于CM与许多幸存者的老年状态之间存在长期相关, 此类研究很切题。
目的: 本研究考查了具有机构养育史 (风险组; RG) 和匹配对照组 (CG) 的老年个体中CM和PTSD之间的联系。还研究了压力性生活事件和社交认方面的差异。
方法:参与者为116名 RG (平均年龄= 70.25岁, 女性占41%) 和122名 CG (平均年龄= 70.71岁, 女性占51%) 。数据使用自我报告量表和临床访谈评估。
结果: RG报告了更高的CM暴露水平。与机构养育相比, 终身PTSD与CM暴露水平的相关更大。CM水平更高的参与者报告了更多的压力性生活事件。 较高的社会认可中介了CG中CM和PTSD之间的关系。
结论: 与机构养育史相比, CM暴露与PTSD有更强的相关。在CG中, 幸存者的社会认同感在一定程度上改善了终身PTSD。对于政策制定者的一个关键问题应该加强针对CM暴露的保护措施, 不仅在机构背景下, 而且考虑到其与PTSD的关联, 应在更广范围内加强。

1. Introduction

Mounting evidence suggests that maltreatment in childhood and/or adolescence can lead to long-term negative mental health correlates (Norman et al., 2012). A specific long-term detrimental impact of child maltreatment (CM) is the development of post-traumatic stress disorder (PTSD; Krammer, Kleim, Simmen-Janevska, & Maercker, 2016). For instance, the review by Messman-Moore and Bhuptani (2017) on CM history and PTSD prevalence showed that individuals who were exposed to childhood sexual and emotional abuse displayed a higher PTSD prevalence in adulthood compared to other types of CM. Furthermore, a systematic review on the outcomes of CM in long-term care showed that CM is linked to PTSD and other adverse outcomes (e.g. anxiety disorder), not only in adulthood, but into older age (Carr, Duff, & Craddock, 2020a). However, not all individuals affected by CM develop PTSD or other maladaptive mental health outcomes over the life course. For instance, in a large, case-control study on adults with and without CM, 22% of those who reported CM showed a resilient trajectory without any ill-health conditions (McGloin & Widom, 2001). To understand this heterogeneity in the development of PTSD, previous research has closely examined various aspects of the CM experience, including factors during CM (e.g. severity, variety, context) and subsequent to CM exposure (e.g. life stressors).

Often discussed in the context of CM and PTSD, is the proposed 'dose-response' relationship, investigated through factors of CM including the severity, variety, and duration (Norman et al., 2012). For instance, a study on CM and mental disorders showed that more severe CM was associated with higher subsequent PTSD prevalence (Duran et al., 2004). Similarly, research has shown a cumulative effect of CM on PTSD development, as the prevalence rate of PTSD appears to increase with the number of experienced CM types (Clemmons, Walsh, DiLillo, & Messman-Moore, 2007); as well as the duration of CM exposure (Kaysen, Rosen, Bowman, & Resick, 2010). However, several studies are challenging this assumption of a simple dose-response relationship. For example, recent findings in the polyvictimization literature highlight the importance of contextual aspects of the CM exposure, such as the setting or the context within which CM has occurred (e.g. unique types of victimization; Adams & Allwood, 2020; Ayer et al., 2019). These contextual factors also need be considered in order to understand the heterogeneity in the development of PTSD after CM.

Existing research within the field of CM, suggests that the long-term correlates of CM can differ depending on the context within which CM was experienced. For instance, a recent study that examined the long-term correlates of CM with institutional survivors and a control group showed that institutional survivors were significantly more likely to be affected by lifetime and current PTSD than control participants (Lueger-Schuster et al., 2018). Furthermore, two studies examining the past-year PTSD prevalence in adults with an institutional upbringing showed that PTSD prevalence ranged from 11.7% to 25% (Courtney et al., 2007; Pecora et al., 2005). These figures are considerably higher than the PTSD prevalence of 1.1% to 2.9% in the general population (Trautmann & Wittchen, 2018). In explaining such disparities in PTSD, some research has emphasized the high levels of exposure to CM in these care settings (Carr, Duff, & Craddock, 2020b; Hermenau, Eggert, Landolt, & Hecker, 2015). However, it remains unclear whether it is the higher level of exposure to CM within these institutions that contribute to the high lifetime PTSD rates; or if the contextual aspects of CM exposure in such institutions also play a role, such as the lack of a stable caregiver (Carr et al., 2020b), institutional hierarchy (Smith & Freyd, 2014), or stigmatization (Lueger-Schuster et al., 2018). In addition to these factors during CM exposure, potential compounding factors in later-life, such as adult trauma and life stressors, also need to be considered when investigating the long-term correlates of CM (Burri, Maercker, Krammer, & Simmen-Janevska, 2013).

Research has repeatedly shown that initial disadvantage, such as CM, can increase the likelihood for future stress exposure (Scott-Storey, 2011). In particular, the proposed higher exposure to CM in institutions may be associated with more later-life stressors in affected individuals. This is in line with previous research in which survivors of institutional CM reported higher exposure to adult stressful life events than control participants (Lueger-Schuster et al., 2018). However, little is known about whether the observed higher rates of adult stressful life events in institutional survivors are linked to the increased exposure to CM within institutions or the placement of individuals into the institutional environment (e.g. malnutrition, poor education; Carr et al., 2020b).

One important aspect that has been found to be associated with the development of PTSD following CM exposure is social acknowledgement. Social acknowledgement is a construct that describes the degree to which an individual feels validated and supported by society, family, and friends following a traumatic event (Maercker & Hecker, 2016). In comparison to social support, social acknowledgement does not encompass the functional (e.g. emotional validation) or structural aspects (e.g. size or composition of social network) of the individual's life circumstances; but rather focuses on the individual's perception of their recognition as a survivor (e.g. general or familial recognition or disapproval; Mueller, Moergeli, & Maercker, 2008). This is in line with a recent study examining a social model of PTSD, where social acknowledgement was found to be related to post-traumatic cognitions, as compared to other related processes of social support such as emotional disclosure and group identification (Woodhouse, Brown, & Ayers, 2018). Previous studies have identified social acknowledgement as both a predictor of PTSD symptomatology, as well as a factor that reduces post-traumatic stress. For example, in a study on recovery from post-traumatic stress, social acknowledgement was found to be a strong predictor of PTSD symptoms post-crime (Mueller et al., 2008). In addition, a study on a web-based intervention for social acknowledgement showed that social acknowledgement led to a reduction in PTSD symptomatology following a one-month intervention (Xu et al., 2016). Furthermore, in a recent study on patient assaults on Chinese emergency nurses, social acknowledgement was found to mediate the relationship between frequency of patient assaults and PTSD symptoms (Guan, Gao, Liu, Cheng, & Ge, 2019). To the best of the authors knowledge, only one study has previously examined social acknowledgement as a mediator of post-traumatic stress in an institutional sample (Krammer et al., 2016). In this study on childhood traumatic events and PTSD with older individuals, social acknowledgement partially mediated the relationship between childhood traumatic events and PTSD. However, this study lacked a control group, which hinders specific conclusions on the level of exposure to CM, its relationship with social acknowledgement, and potential differences between institutional survivors and controls. Furthermore, the institutional group was a very specific sample of individuals affected by indentured child labour, and other forms of institutionalized child welfare contexts were not investigated. This limited the generalization of the results to other individuals affected by institutional child welfare contexts.

1.1. Aims of the study

To address these gaps in the literature on CM and PTSD, this study investigates the link between CM and lifetime PTSD in individuals from institutional child welfare contexts. Specifically, it is hypothesized that individuals with a history of institutional upbringing will show higher levels of exposure to CM and lifetime PTSD, compared to individuals with no history of institutional upbringing. Furthermore, it is hypothesized that higher levels of CM exposure will be linked to a higher number of adult stressful life

events, and that this association will be pronounced in the institutional group compared to the control group, due to the proposed higher level of CM exposure in institutional settings. Finally, the study aims to examine the potential dampening or exaggerating effect of social acknowledgement on the relationship between CM and lifetime PTSD. It is hypothesized that individuals with a history of institutional upbringing will report lower levels of social acknowledgement, compared to individuals in the control group. In addition, it is hypothesized that in the institutional group, the expected low levels of social acknowledgement will be linked to an exaggerating effect on the relationship between CM and lifetime PTSD; whereas in the control group, it is expected that high levels of social acknowledgement will be linked to a dampening effect on the relationship between CM and lifetime PTSD.

2. Methods

The current study was conducted within the larger project 'Differential aging trajectories in high-risk individuals with past experiences of early adversity', which is part of the National Research Programme 'Welfare and Coercion – Past, Present and Future' (NRP76). The study protocol was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the Faculty of Arts and Social Sciences in the University of Zürich (ID:19.4.3).

2.1. Participants

A total of N = 250 individuals were recruited for the present study. All participants provided informed consent. Half were affected by compulsory social measures and placements (CSMP) in childhood and/or adolescence, referred to as the risk group (RG). The other half were an age-matched control group (CG). Inclusion criteria were Swiss-German speaking and a minimum age of 50 years. Fifty years was chosen as the minimum age to capture the potential start of age-related decline (e.g. physical, cognitive functioning) and in an attempt to minimize any potential survivor bias (Mc Gee, Höltge, Maercker, & Thoma, 2018). In the RG, participants had to have been affected by CSMP for at least one year, before 18 years of age. In Switzerland, CSMP were ordered by the administrative authorities to counteract the growing economic threat due to weak crop yields, lengthy famines, and the increasing impoverishment of the population (Federal Office of Justice, 2020). Generally for adolescents, CSMP involved forced placements into closed penal facilities, detention centres, psychiatric institutions, as well as enforced adoptions and compulsory medical procedures (e.g. mandatory sterilization, forced abortion, or compulsory drugging; Federal Office of Justice, 2020). Children were often placed into foster families or children's homes, where it was common practice that minors had to work for their daily living (e.g. farming, dairy; Leuenberger & Seglias, 2008). For a detailed description of CSMP practices in Switzerland, see the recent study on the long-term mental and physical health correlates of these older survivors of child welfare practices (Thoma, Bernays, Eising, Pfluger, & Rohner, 2021).

2.2. Recruitment

During the application process for the solidary contribution, individuals affected by CSMP could indicate whether they wanted to be contacted in future for research purposes on the broader topic of CSMP. The last author of this paper (MVT) received a list of these individuals from the Federal Office of Justice. Then in timed intervals between July and November 2019, letters were sent to N = 495 individuals. These letters contained the description and aim of the study, as well as the contact information of the study team. From these individuals, n = 116 were interested in participating in the study. Additional recruitment took place through the oral snowballing principle and the posting of the project flyer on websites and distributed per online mail.

Participants in the CG were recruited via posted flyers and advertisements on websites directed at older adults, as well as through contacts of the study team. In addition, participants in the CG were also recruited from the participant pool of the affiliated University Research Priority Programme (URPP) 'Dynamics of Healthy Ageing' at the University of Zürich.

2.3. Procedure

Interested individuals called the study phone and were informed about the study aim and procedures. Individuals were then screened for the inclusion criteria and two face-to-face appointments were scheduled. Depending on the participant's preference, the appointments were conducted at the University of Zürich or the participants' home. At the first assessment (A1), all participants provided informed consent and then completed the Diagnostic Interview for Mental Disorders (DIPS), as well as an additional assessment of CSMP-related information for the RG. All interviewers were trained in conducting the DIPS and were supervised by the last author, who is a psychotherapist with years of clinical experience. At the second assessment (A2) participants completed questionnaires on life adversity, coping, as well as behavioural and cognitive assessments. Upon completion of A2, participants received a compensation of approximately 250 USD.

2.4. Measures

2.4.1. Socio-demographic information

Socio-demographic information included age, gender, education, and specific questions for the RG regarding their CSMP background (e.g. initial age, duration).

2.4.2. PTSD

PTSD was assessed using the open access Diagnostic Interview for Mental Disorders (DIPS; Margraf, Cwik, Pflug, & Schneider, 2017; Margraf, Cwik, Suppiger, & Schneider, 2017). The PTSD section of the DIPS begins by asking about exposure to 19 potentially traumatic events across the life span (e.g. physical abuse in childhood, sexual abuse in adulthood, life-threatening disease). A PTSD diagnosis was given when all DSM-5 criteria (A-H) were fulfilled (American Psychiatric Association, 2013). Subthreshold PTSD was given in accordance with the proposed *Definition-1* by Franklin, Raines, Chambliss, Walton, and Maieritsch (2018), which required criteria A, B, C, and either D or E to be fulfilled. The DIPS has shown moderate agreement between patients and relatives on PTSD diagnosis over the life course ($\kappa = 0.57$; Cwik et al., 2018).

2.4.3. Child maltreatment and stressful life events

The German version of the *Traumatic Experience Checklist* (TEC) assessed traumatic and stressful life experiences in childhood, adolescence, and adulthood (Nijenhuis, Van Der Hart, & Kruger, 2002). Following the manual by Nijenhuis (2017), separate scores were calculated for each CM type (e.g. emotional neglect, emotional abuse, physical abuse), as well as a 'total CM exposure' score encompassing all CM types and incorporating various aspects of trauma exposure (e.g. severity, variety, duration). Furthermore, a sum score of stressful life events over the life course was also calculated with the TEC based on the presence of 20 stressful life events. Higher values indicate more stressful life events.

2.4.4. Social acknowledgement

Social acknowledgement was measured using the German 16-item *Social Acknowledgement Questionnaire* (SAQ; Maercker & Mueller, 2004). The SAQ captures an individual's perception of their recognition as a victim or survivor following a traumatic event, as well as perceived support from family, friends, and society. Responses are recorded on a 4-point Likert scale ranging from 0 (not at all) to 3 (completely). In the current study, the SAQ showed high internal consistency across the subscales, with the following Cronbach's alphas: general disapproval ($\alpha = .74$), recognition ($\alpha = .74$), family disapproval ($\alpha = .70$).

2.5. Data analysis

Analyses were performed using the Statistical Package for Social Sciences (SPSS) version 25.0 (IBM Corp, 2017) and the PROCESS macro for SPSS version 3.0 (Hayes, 2018). Only individuals with a lifetime history of trauma ($n = 195$) answered the SAQ. For those who did not report a lifetime history of trauma ($n = 43$; RG $n = 22$, CG $n = 21$), the SAQ values were imputed with the value zero, reflecting the lack of a specific impact from a traumatic experience following Schafer and Graham (2002). On all measures, there were less than 5% missing values due to item nonresponse, with Little's missing completely at random (MCAR) test indicating the nonresponses to be MCAR. Accordingly, missing values were replaced using the Expectation-Maximization algorithm (Dempster, Laird, & Rubin, 1977). Group differences in gender and education were calculated using χ^2-test statistics. To examine the link between CM and lifetime PTSD, Spearman's rho correlations were performed, and separate linear regression analyses were conducted for the RG and the CG. To examine the quantity of stressful life events, separate linear regression analyses were conducted for the RG and CG. To examine differences in the level of social acknowledgement between the RG and CG, a linear regression analysis was conducted. To assess social acknowledgement as a mediator between CM and lifetime PTSD for the RG and CG, separate mediation analyses were performed (model 4 using one mediator), with confidence intervals calculated using bootstrapping (number of bootstrap samples = 5000). To determine the minimum required effect size to ensure adequate power in line with recommendations (e.g. Cohen, 1992), a sensitivity power analysis was conducted for the present study. With an alpha level of 5% and a power of 80%, the minimum effect size was $f = 0.18$ for a sample size of $N = 238$. According to common conventions (e.g. Cohen, 1992), this corresponds to a small to medium effect size, which is of high practical importance in the field (Weber, Jud, & Landolt, 2016).

3. Results

3.1. Sample characteristics

The final sample consisted of $N = 238$ older adults, as data on CM was missing for 12 participants, who were excluded from the analysis. The RG ($n = 116$) had a mean age of 70.25 years ($SD = 12.47$) and the CG ($n = 122$) had a mean age of 70.71 years ($SD = 9.63$). Socio-demographic data are displayed in Table 1.

3.2. Child maltreatment, group, and lifetime PTSD

In the following section, the association between CM and lifetime PTSD symptomatology across both

Table 1. Socio-demographic characteristics.

	Total Sample (N = 238)		Risk Group (n = 116)		Control Group (n = 122)				
Sample Characteristics	*N*	%	*N*	%	*N*	%	χ^2	*df*	*p*
Sex:							2.51	1	.073
Male	127	53.4	68	58.6	59	48.4			
Female	111	46.6	48	41.4	63	51.6			
Education:							47.81	7	.000***
No education	5	2.1	5	4.3	0	0			
Primary school	9	3.8	8	6.9	1	0.8			
Upper secondary school	24	10.1	19	16.4	5	4.1			
High school	6	2.5	2	1.7	4	3.3			
Vocational job training	93	39.1	50	43.1	43	35.2			
Higher professional training	37	15.5	18	15.5	19	15.6			
University	52	21.8	7	6.0	45	36.9			
Other	12	5	7	6.0	5	4.1			
	M	*SD*	M	*SD*	M	*SD*	F	*df*	*p*
Age:							18.8	236	.75
	70.5	11.1	70.2	12.4	70.7	9.6			

χ^2 = Chi-squared test, *df* = degrees of freedom, *p* = p value, *M* = mean, *SD* = standard deviation, *F* = test for variance, *** $p < .001$.

Table 2. Means and intercorrelations of child maltreatment and lifetime post-traumatic stress disorder across groups.

	M (*SD*)	1	2	3	4	5	6
1. Emotional neglect	6.39 (5.25)	-	.616***	.497***	.194***	.244***	.265***
2. Emotional abuse	5.29 (5.23)		-	.708***	.258***	.291***	.333***
3. Physical abuse	4.57 (4.73)			-	.271**	.323***	.307***
4. Sexual abuse	0.97 (2.19)				-	.477***	.247***
5. Sexual harassment	1.33 (2.16)					-	.160**
6. Lifetime PTSD	-	.265***	.333***	.307***	.247***	.160**	-

M = mean, *SD* = standard deviation, PTSD = post-traumatic stress disorder, ** $p < .05$, *** $p < .001$.

Table 3. Means and standard deviations of child maltreatment type per group.

Child Maltreatment Type	Risk Group (n = 116) M (*SD*)	Control Group (n = 122) M (*SD*)	R^2
Emotional neglect	8.09 *(4.61)*	4.76 (*5.30*)	.102***
Emotional abuse	6.61 (*4.89*)	4.03 (*5.26*)	.061***
Physical abuse	5.91 (*4.24*)	3.29 (*4.83*)	.077***
Sexual abuse	1.30 (*2.29*)	0.66 (*2.05*)	.022**
Sexual harassment	1.97 (*2.46*)	0.71 (1.62)	.083***

M = mean, *SD* = standard deviation, R^2 = adjusted variance explained, ** $p < .05$, *** $p < .001$.

Table 4. Prevalence rates of lifetime post-traumatic stress disorder across both groups, and separately for the risk and control groups.

	PTSD Diagnosis		
Sample	None *N* (%)	Subthreshold *N* (%)	Full *N* (%)
Total (N = 238)	178 (74.8)	13 (5.5)	47 (19.7)
Risk Group (n = 116)	76 (65.5)	9 (7.8)	31 (26.7)
Control Group (n = 122)	102 (83.6)	4 (3.3)	16 (13.1)

N = number and % = percentage of participants who fulfilled the diagnosis category, PTSD = post-traumatic stress disorder, Subthreshold = in accordance with the definition by Franklin et al. (2018), Full = when all DSM-5 criteria (A-H) were fulfilled.

groups is first investigated. In a next step, group differences in CM and lifetime PTSD symptomatology are assessed. Lastly, it is examined whether the level of exposure to CM and/or group membership are associated with lifetime PTSD symptomatology.

Across both groups, participants with a higher total CM exposure and higher scores on each CM type showed significantly higher lifetime PTSD symptomatology compared to those with lower total CM exposure (see Table 2 for means and intercorrelations). Furthermore, regression analyses revealed that the RG reported higher levels of exposure to CM compared to the CG, (R^2 = .124, F (1,237) = 33.54, $p < .001$) (see Table 3 for means and standard deviations).

Regression analysis revealed a significant effect of group on lifetime PTSD (R^2 = .039, F (1,237) = 9.60, $p < .05$). This indicates that the RG showed higher lifetime PTSD scores compared to the CG (see Table 4 for prevalence rates of PTSD per group). When controlling for total CM exposure in the analysis of variance in lifetime PTSD by group, the incremental effect of group within the model was not significant ($p > .05$), indicating that group does not independently contribute to the explanation of variance in lifetime PTSD.

3.3. Stressful life events

With regard to stressful life events, this study examined whether there were differences in the level of adult stressful life events depending on the level of exposure to CM, and between individuals from institutional contexts and controls.

Across both groups, participants with higher levels of total CM exposure reported significantly more stressful life events than those with lower total CM exposure (R^2 = .057, F (1,226) = 13.66, $p < .001$). No significant differences in stressful life events were observed

Table 5. Bivariate correlations between child maltreatment and stressful life events, separately for the risk and the control group.

	1	2	3	4	5	6
Risk Group						
1. Emotional neglect	-	.587***	.499**	.107	.203**	.203**
2. Emotional abuse		-	.628***	.214**	.296***	.363***
3. Physical abuse			-	.176	.304***	.336***
4. Sexual abuse				-	.675***	.247**
5. Sexual harassment					-	.269***
6. Stressful life events						-
Control Group						
1. Emotional neglect	-	.584***	.411***	.204**	.138	.032
2. Emotional abuse		-	.733***	.251***	.174	.018
3. Physical abuse			-	307***	.236**	.047
4. Sexual abuse				-	.124***	.044
5. Sexual harassment					-	.072
6. Stressful life events						-

** $p < .05$, *** $p < .00$.

between the RG and CG (R^2 = .014, F (1,237) = 3.09, $p > .05$) (see Table 5 for bivariate correlations).

3.4. Social acknowledgement

With regard to social acknowledgement, this study examined whether, (a) individuals in the RG showed lower levels of social acknowledgement compared to the CG; and (b) whether these differences were associated with the prevalence rates of lifetime PTSD.

Regarding group differences, the regression analysis revealed a significant effect of group on social acknowledgement (R^2 = .112, F (1,237) = 29.85, $p < .001$), indicating that the RG reported less social acknowledgement compared to the CG. In a next step, total CM exposure was added to the model to investigate the relative contribution of group and CM in explaining the incremental variance in social acknowledgement. This model explained a higher proportion of variance in social acknowledgement than group membership alone (R^2 = .155, F (2,237) = 21.57, $p < .001$) (see Table 6 for the analysis of social acknowledgement by CM and group).

In the CG, a significant total effect was observed between total CM exposure and lifetime PTSD (b = .025, 95% CI [.0172, .0328], t = 6.382, $p < .05$), explaining 25.34% of the variance in lifetime PTSD.

Table 6. Regression analysis of social acknowledgement by child maltreatment and group.

	Social Acknowledgement			
Predictors	B	*SE*	*t*	*p*
Constant	5.49	.68	8.06	< .001
Group	−3.43	.85	−4.12	< .001
Total Child Maltreatment Exposure	−.100	.03	−3.45	< .001
Observations	N = 237			
R^2	.155			
R^2 adjusted	.148			

N = number of participants, R^2 = goodness-of-fit measure, R^2 adjusted = goodness-of-fit measure corrected, B = slope, SE = standard error, t = t-test, p = p value.

When social acknowledgement was included as a mediator, a significant direct effect emerged, explaining a higher percentage of variance (29.41%). A significant indirect effect was also observed, indicating that social acknowledgement acts as a partial mediator in the relationship between total CM exposure and lifetime PTSD (b = .0037, 95% CI [.001, .008]). Similarly, in the CG, social acknowledgement significantly partially mediated the relationship between CM types and lifetime PTSD: emotional neglect (b = .0219, 95% CI [.006, .041]), emotional abuse (b = .0163, 95% CI [.004, .032]), physical abuse (b = .0152, 95% CI [.003, .029]), and sexual abuse (b = .0297, 95% CI [.008, .082]). Sexual harassment was not significantly mediated by social acknowledgement in the CG ($p > .05$). See Figure 1 for the mediation models of the relationship between CM types, social acknowledgement, and lifetime PTSD. In the RG, social acknowledgement did not significantly mediate the relationship between any CM type or total CM exposure and lifetime PTSD ($p > .05$).

4. Discussion

This study investigated the link between CM and lifetime PTSD in older individuals from institutional contexts and an age-matched control group. Results revealed that across both groups, individuals with higher levels of CM exposure reported higher lifetime PTSD. Furthermore, individuals from institutional contexts (i.e. RG) reported higher levels of CM exposure compared to control participants. Interestingly, the level of CM exposure showed a stronger association with lifetime PTSD than a history of institutional upbringing. Moreover, the relationship between CM and lifetime PTSD was mediated by social acknowledgement only in the control group, who also reported higher levels of social acknowledgement compared to the risk group. Across both groups, individuals with higher levels of CM exposure reported more stressful life events over the life course.

4.1. Child maltreatment and lifetime PTSD

The study finding of higher lifetime PTSD in individuals with higher levels of CM exposure is in line with previous research. More precisely, previous literature has repeatedly demonstrated a dose-response relationship between multiple factors during CM exposure and PTSD, including severity (Steine et al., 2017), variety (Bosch et al., 2020), and duration (Kaysen et al., 2010). However, in the present study, these CM-related factors (e.g. severity, variety, duration) were not examined separately as in the above-mentioned studies, but rather investigated in form of a composite CM score that takes into account multiple factors during trauma exposure (Nuijenhui et al., 2017).

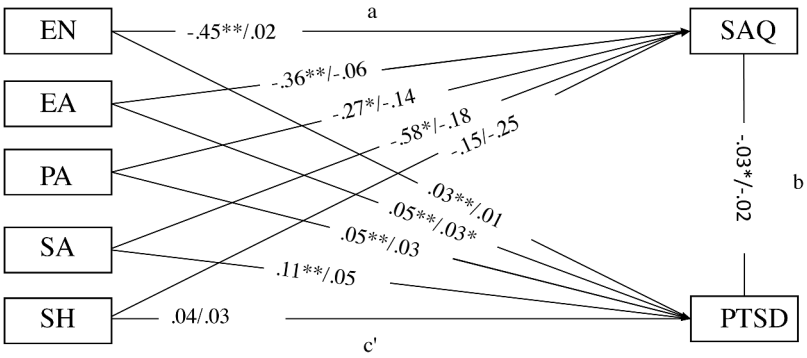

Figure 1. Mediation models of the relationship between child maltreatment type (predictors) and lifetime post-traumatic stress disorder (outcome variable) across both groups, mediated by social acknowledgement. Numbers in the single mediation models represent unstandardized regression coefficients. EN = emotional neglect, EA = emotional abuse, PA = physical abuse, SA = sexual abuse, SH = sexual harassment, SAQ = social acknowledgment questionnaire, PTSD = post-traumatic stress disorder. Path a = individual effect of each child maltreatment type on the mediator (social acknowledgment). Path b = the effect of the mediator (social acknowledgment) on lifetime PTSD. Path c′ = direct effect of child maltreatment type on lifetime post-traumatic stress disorder. *$p < .05$; **$p < .001$.

4.2. The importance of the context of child maltreatment

The individuals from institutional contexts reported higher levels of CM exposure compared to controls. This finding is supported by previous research on the placement of minors within welfare care. For instance, in a study on institutional child abuse by the Roman Catholic Church, survivors reported abuse rates up to six times greater than individuals with no history of institutional care (Langeland, Hoogendoorn, Mager, Smit, & Draijer, 2015). Further support stems from the systematic review on CM in long-term care (Carr et al., 2020b), which showed that survivors of institutional upbringing reported severe forms of emotional neglect (e.g. emotional unresponsiveness), physical neglect (e.g. malnutrition), emotional abuse (e.g. constant rejection), physical abuse (e.g. punching), and sexual abuse (e.g. forced touching) during their time in institutional care. In accordance with this existing literature, the Swiss institutionalized sample was also exposed to higher level of CM compared to a control group of the general population.

4.3. Institutional contexts and lifetime PTSD

The present study showed that the risk group reported higher lifetime PTSD (26.7%) compared to the control group (13.1%). This is consistent with previous study findings of high lifetime PTSD (56.4%) in an Austrian foster care group compared to a control group (< 1%), which also assessed PTSD with a structured clinical interview for DSM-IV (Lueger-Schuster et al., 2018). With regard to the institutional samples, lifetime PTSD rates were higher in the Austrian sample than in the present study. However, in the Austrian sample, the foster care group was specifically recruited with the goal of finding survivors of institutional abuse; whereas these individuals in the present study had to be affected by institutional upbringing, but not necessarily by institutional abuse. These different recruitment strategies may have resulted in differences in exposure to institutional abuse and thus, also in PTSD. With regard to the control group, the lifetime PTSD rate was considerably high when compared to the control group in the study by Lueger-Schuster et al. (2018); and also, in comparison to the 12-month PTSD prevalence rates (1.1% – 2.9%) observed in the general European population (Wittchen et al., 2011). Future investigations that estimate PTSD prevalence may benefit from additionally incorporating the relatively new concept of complex PTSD (Karatzias et al., 2017). This may help capture more accurate prevalence rates of PTSD in the general population, which may be confounded by comorbid and unexamined conditions.

4.4. Institutional contexts, child maltreatment, and lifetime PTSD

In the current study, the level of CM exposure posed a higher risk for lifetime PTSD over and above having been brought up within institutional contexts. Here it is important to mention that in addition to relatively high rates of PTSD in the control group, level of exposure to CM was also relatively high. More specifically, in the control group, 55.2% reported having been affected by emotional abuse, 57.6% by emotional neglect, 51.2% by physical abuse, and 20.8% by sexual abuse. In comparison, in the institutional group, 80% reported emotional abuse, 82.3% emotional neglect, 76.2% physical abuse, and 40.8% sexual abuse. When compared to the Austrian control group sample (Lueger-Schuster et al., 2018), this is a much higher level of exposure to CM in the present control group. Additionally, in the present study no differentiation

was made between institutional and intra-familial CM in the risk group. Hence, it may be that individuals in the risk group experienced both institutional CM and intra-familial CM. As such, it is not possible to conclude with certainty that the high PTSD rates are associated with the level of CM exposure, and not due to additional contextual factors (i.e. intra-familial vs. institutional setting) during the exposure to CM. Future investigations may benefit from differentiating between and comparing institutional vs. intra-familial factors more closely, so as to increase the knowledge on the long-term correlates of institutional upbringing into older age. Furthermore, future investigations should acknowledge manual-specific PTSD differences, as previous research has shown that divergent diagnostic thresholds may be observed (Bruckmann, Haselgruber, Sölva, & Lueger-Schuster, 2020).

4.5. Stressful life events

Across both groups in the current study, individuals with higher levels of CM exposure reported higher rates of adult stressful life events. This is consistent with the stress sensitization hypothesis of depression (Hammen, 2015), which states that individuals with a history of early adversity are more prone to develop a depressive episode during low levels of stress, compared to individuals without such a history. In the context of stress exposure, this can lead to a heightened stress awareness perception (i.e. subjective perception of more stressful life events over the life course; Hammen, 2015). In contrast to expectations, the groups in the current study did not significantly differ with regard to number of stressful life events. Nevertheless, previous research on post-abuse events have shown that individuals with a history of institutional upbringing were more prone (than controls) to certain types of later-life stressors, such as physical assaults and serious injuries (Lueger-Schuster et al., 2018). This can also be seen in the present findings, as the risk group reported more instances of serious physical injury than the control group. It may be that individuals with a history of institutional upbringing are particularly susceptible to certain types of stressors throughout their later life course (e.g. physical injury or illness). Future studies may benefit from investigating incidences of specific types of stressful life events to better inform preventative measures.

4.6. Social acknowledgement

A novel observation in this study was that the institutional group reported a lower level of social acknowledgement than the control group. In light of the higher CM exposure in the risk group, it may be that higher CM exposure is linked to lower social acknowledgement; suggesting that only with lower levels of CM exposure can survivors best perceive beneficial levels of social acknowledgement from their environment. However, more research is needed to support this speculative statement. Furthermore, social acknowledgement partially mediated the relationship between CM and lifetime PTSD in the control group. This is in line with findings from a previous study on social acknowledgement and disclosure, in which social acknowledgement was shown to mediate PTSD symptoms from pre-test to post-test (Xu et al., 2016). However, in the current study, this mediation effect was only observed in the control group. Future intervention studies may reveal important insights by investigating which levels of social acknowledgement are optimal for promoting post-trauma recovery in CM survivors. Contrary to our hypothesis, social acknowledgement did not exert an exaggerating mediating effect on the CM and PTSD relationship in the risk group. This was initially hypothesized as research has shown a reluctance towards social acknowledgement of institutional betrayal (Smith & Freyd, 2014); and in Switzerland the social acknowledgement of institutional CM is still a relatively recent phenomenon (Federal Office of Justice, 2020). However, it may be that in the context of CM, social acknowledgement exerts a buffering effect rather than an exaggerating effect on PTSD over the life course. More research is needed to examine the potential buffering and exaggerating effects of social acknowledgement in CM survivors.

4.7. Limitations and strengths

There are several limitations in the current study that have to be critically considered when interpreting the findings. First, given the cross-sectional, retrospective study design, no causal inferences can be made. Additionally, the data on CM could have been affected by a memory recall and retrieval bias (Sheikh, 2018). However, a recent study on autobiographical memory recall examined traumatized individuals of advanced age (mean age = 72 years) with and without PTSD, as well as non-traumatized individuals. Results found no differences with respect to memory recall (Wittekind et al., 2017). Thus, while there may be the potential for memory biases in our older adult sample due to the retrospective design, it may be assumed that both groups are comparably affected due to the same mean age of both samples. Second, the sample recruitment might have been affected by several selection biases: In light of the advanced age of the study sample, a survivor bias might have influenced the study findings (Mayeda et al., 2016). The risk group might have been particularly affected by the survivor bias, given the significantly different levels of CM between

groups, coupled with the finding that higher rates of CM were previously linked to multiple health-impeding conditions and leading causes of death during adulthood (Felitti et al., 1998). Hence, individuals who did not participated may be less resilient. However, this cannot be confirmed as no complete register currently exists for the deaths of individuals affected by CSMP in Switzerland (i.e. our sample of interest in the current study). Another selection bias may have affected the control group, indicated by the comparably high rates of reported exposure to CM (e.g. 38.5% physical abuse in the control group, compared to 81.9% in the risk group; 33.6% sexual transgression in the control group, compared to 53.4% in the risk group). This may be due to the fact that the study purpose was not blinded (i.e. recruitment study title: 'Variability in responses to early-life adversity and their consequences on aging'), which might have led to a greater self-selection of participants with (higher rates of) CM experiences. Lastly, given the cross-sectional nature of this data, the present study could not consider the role of cumulative trauma and more recent trauma with regard to lifetime PTSD. It may be that participants would display variability with regard to the nature (e.g. subjective impact of the event, context of the event) and the sequence (e.g. duration, timepoint of occurrence in life) of such traumas. Therefore, a more sophisticated data collection with particular focus on the nature and sequence of traumatic events should be implemented in future studies to investigate and discuss the occurrence of cumulative trauma, recent trauma, and lifetime trauma in the aftermath of CM. Nevertheless, using a composite score of CM, the current study findings revealed important findings on CM and long-term correlates. Future studies may benefit from incorporating such a composite score with regard to traumatic events in the aftermath of CM. Despite the limitations, this study has several strengths as it examines the long-term correlates of CM experienced within an institutional context in an older adult sample (mean age of 70.5 years). This is important given the unique window of time in which to investigate this, due to the older age stages of the Swiss institutional sample. Insights gathered from this survivor population may help to foster intervention strategies for both current survivors and future generations affected by CM.

5. Conclusion

The present study showed that individuals from institutional contexts were exposed to higher levels of CM, reported higher rates of lifetime PTSD, and experienced less social acknowledgement compared to age-matched controls. However, the results also suggest that the level of CM exposure places individuals at a higher risk for the development of lifetime PTSD, over and above having been brought up in an institutional context. Therefore, to counteract the detrimental long-term consequences of CM and its association with lifetime PTSD, a critical issue for policy makers should be to enhance safeguarding measures against CM, not only within institutional contexts, but also in the general public. Furthermore, enhancing public education and awareness of the observed long-term correlates of CM, and institutional upbringing in particular, may help to foster understanding for affected individuals. This may in turn improve social acknowledgement towards survivors and support post-traumatic stress reduction.

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No conflict of interest was reported by the authors..

Data availability statement

As this study is part of a larger longitudinal project the data cannot be made publicly available at this time.

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