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Research article

Survivors of institutional abuse in long-term child care in Scotland

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ABSTRACT

Background: The Scottish Child Abuse Inquiry (SCAI) commissioned the research project to document the outcomes of institutional abuse in long-term child care in Scotland.
Objective: To profile the experiences of survivors abused in long-term child care in Scotland, and to develop a model which linked maltreatment, risk and protective factors, and outcomes.
Participants and Setting: 225 survivors of historical institutional abuse in Scotland, who made witness statements to SCAI.
Methods: Data were extracted from witness statements using a coding frame developed through a thematic analysis of a subsample of 52 statements.
Results: Survivors had been in care in predominantly Catholic and non-religious residential institutions in Scotland for an average of 8 years, having entered at an average age of 6.8 years. They had suffered multiple forms of maltreatment. Maltreatment rates were: physical abuse, 95.6%; emotional abuse, 85.3%; sexual abuse, 60.4%; emotional neglect, 51.1%; and physical neglect, 37.3%. Across the lifespan survivors had negative outcomes in psychosocial adjustment (96%), mental health (84%), and physical health (43%). The effect of maltreatment in care on psychosocial problems was mediated by both risk and protective factors; and on mental health was mediated by risk factors, but not protective factors. Maltreatment in care had a direct effect on physical health which was not mediated by risk or protective factors. The effects of the cumulative number of risk factors on adverse mental health and psychosocial outcomes was greater than that of maltreatment, and protective factors had a limited impact on adverse outcomes.
Conclusions: Evidence-based child protection policies and practices should be implemented to prevent institutional abuse and treat child abuse survivors in Scotland.

1. Introduction

The study described in this paper documents the profile of survivors of physical and sexual abuse which occurred while in long-term residential child care in Scotland. It also presents a model of the links between maltreatment and risk and protective factors on the one hand, and outcome in the areas of physical and mental health, and psychosocial adjustment on the other. It is based on an analysis of data extracted from witness statements made to the Scottish Child Abuse Inquiry (SCAI, https://www.childabuseinquiry.scot). SCAI, chaired by Lady Anne Smith, was set up in October 2015 to investigate the nature and extent of child abuse in residential and foster care in Scotland, examine the effects of abuse on survivors, and make recommendations for practice, policy and legislation to protect children in care in Scotland from abuse in future. As part of this remit, our team was commissioned by SCAI to conduct the research described in this paper.

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Reviews of international research and inquiries consistently indicate that child maltreatment occurs in a wide range of long-term residential child care settings, and that historically it has been denied or under-reported (Biehal, 2014; Gallagher, 1999; Sen et al., 2008; Sherr et al., 2017; Sköld, 2013; Uliando and Mellor, 2012). There is considerable variability in estimates of the extent of this problem. This is due to two factors. First, there are wide variations in the actual rates of child maltreatment across districts, countries, cultures and types of child care facilities. Second, there are considerable methodological differences in sampling strategies, and in the way child maltreatment is defined, detected, and assessed across research studies. Biehal et al. (2014) conducted a study of 156 of all 211 UK local authorities during the period 2009 – 2012. They concluded that, annually, there were 450–550 confirmed cases of child abuse or neglect in foster care, and 250–300 confirmed cases of child abuse or neglect in residential care. Physical abuse was by far the most common form of maltreatment in both foster and residential care. Font (2015) conducted a US state-wide study of Wisconsin administrative data on 96,000 placements involving 43,000 children for the period 2005 – 2012. She found that maltreatment allegation rates were highest in kinship care (15%) and lowest in congregate care (5%), with allegation rates in foster care falling between these two extremes (9%). Neglect was the most commonly alleged maltreatment type in informal kinship care, whereas physical abuse was most commonly alleged in other forms of care. In a systematic review up to 2009, involving 18 UK, US and Australian epidemiological studies, Biehal (2014) found that the incidence and prevalence of child maltreatment in foster care ranged from 0.27%–2% and 3%–19% respectively. In a systematic review of the international literature on maltreatment in large institutional settings such as orphanages, Sherr et al. (2017) identified nine studies conducted in Tanzania, Romania, Kazakhstan, Netherlands, Cambodia, Ethiopia, India, and Kenya involving about 3000 children. They found that rates of maltreatment including physical and sexual abuse ranged from 13% to 93%. Where comparisons were available, rates of abuse in large institutions were higher than in other forms of substitutive care or in families. From the foregoing it is clear that internationally, maltreatment of children in care is a problem of significant proportions.

The causes of child maltreatment in long-term care are complex and involve a wide range of factors (Nunno, 1997; Smith & Freyd, 2014; Wolfe et al., 2003). Multifactorial models of child maltreatment in long-term care propose that risk and protective factors in multiple domains contribute to child abuse and neglect. They include factors associated with the perpetrator, the young person in care, the type of care setting (size, power structure, staff oversight), out-of-home carers, peers in care, community and childcare-center based child protection systems, the young person's birth family, the quality of relationships between the young person and members of their social network, and the wider social, economic, educational, and cultural environment systems within which the young person lives.

A vast body of evidence, summarized in three recent reviews, shows that child maltreatment within birth families (Carr et al., 2018a), poorly resourced orphanages (Carr et al., 2018b), and long-term foster care (Carr et al., 2018c) is associated with significant, long-lasting detrimental outcomes in the domains of physical health, mental health, and psychosocial adjustment.

The study described here had three aims. The first was to profile the experiences of survivors of physical or sexual child abuse who had been maltreated in long-term child care in Scotland in terms of demographic characteristics, child care history, maltreatment in long-term child care, physical and mental health, psychosocial adjustment, risk factors, and protective factors. The second aim was to determine the correlations between scores on scales assessing maltreatment in child-care, and risk and protective factors on the one hand, and outcomes in the domains of physical health, mental health and psychosocial adjustment, on the other. The third aim was to determine if the data fit the mediational model in Fig. 1 which linked child maltreatment in-long term care, risk and protective factors, and outcomes in the areas of physical and mental health, and psychosocial adjustment.

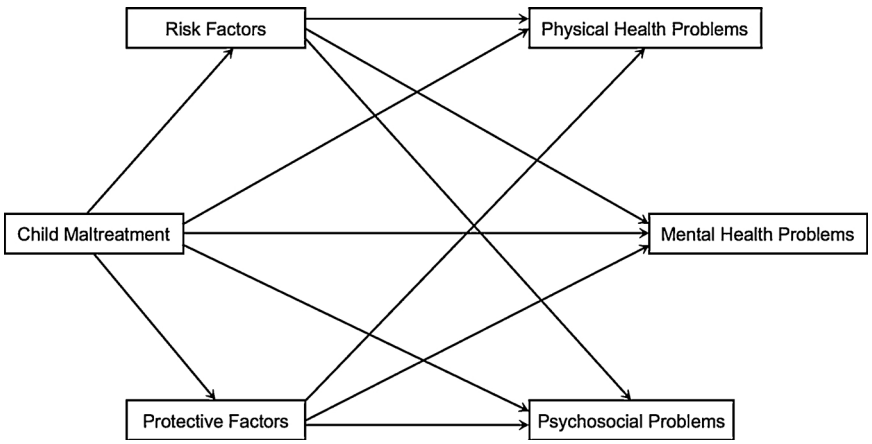

Fig. 1. The mediational model developed to examine patterns of relationships among child maltreatment, risk and protective factors and outcomes in the domains of mental and physical health problems and psychosocial adjustment problems.

2. Method

2.1. Witness statements

Data for this study were extracted from 225 witness statements provided, with interviewee consent, to the research team by SACI. These were all suitable witness statements generated between the inception of SCAI in October 2015 and April 2018, in which witnesses indicated that they had experienced physical or sexual abuse. Forty statements were excluded because they were unsuitable. Fifteen of these were second-hand accounts of abuse. In 14, abuse was not mentioned. In eight, emotional, but not physical or sexual abuse was mentioned. Three statements were incomplete. Witness statements were made by survivors of historical child abuse which occurred while in residential care in Scotland between 1931 and 2013. Survivors made witness statements after a period of engagement with the SCAI witness support team. Private sessions were arranged where survivors met with trained, trauma-informed SCAI personnel. These sessions usually involved two statement-takers and one witness support staff-member. Interviews were held near interviewees' homes. They usually lasted a number of hours, with rest-breaks as required. While there was not a standard set of questions, all interviews focused on a number of key areas including: life before going into care, experiences during residential care including daily routines and child abuse, experiences of reporting abuse, and life after care, including the impact of abuse on their lives, and involvement with support services. Following private sessions, witness support teams checked interviewees' wellbeing with follow-up phone calls and maintained contact, as required, until review sessions. For each interviewee, a witness statement was produced based on audio recordings and contemporaneous interviewer notes. In review sessions survivors reviewed and edited their statements. These were attended by one statement taker and a witness support staff member. Witnesses signed their edited statements once they were satisfied with their accuracy. Witness statements ranged in length from 9 to 64 pages containing a series of numbered paragraphs. SCAI covered costs incurred by interviewees in making witness statements. Prior to private sessions, interviewees were informed that names of abuse perpetrators and descriptions of abuse included in their statements would be passed by SCAI to Police Scotland. This was done so that Police Scotland could assess the current risk that perpetrators might pose to children or vulnerable adults. Interviewees were also informed that this procedure would be followed if they disclosed that they had abused another person, or were at risk of harming another person. This may have curtailed survivors' willingness to report their own abusive behavior. No redress scheme was in place when witness statements for the current research program were produced. Thus, it is unlikely that financial incentives unduly influenced accounts of survivors' abusive experiences.

2.2. Coding frame

Data were extracted from witness statements using a 158-item coding frame. Codes fell into the following domains: (1) demographic characteristics, (2) childcare history, (3) maltreatment in long-term care (4) physical health outcomes, (5) mental health outcomes, (6) adverse psychosocial outcomes; (7) risk factors, and (8) protective factors. Some codes were developed before conducting a thematic content analysis (Braun & Clarke, 2006) of a subsample of 52 statements and some emerged during content analysis. The Global Assessment of Functioning scale (GAF, Luborsky, 1962) was incorporated into the coding frame to assess overall psychosocial adjustment. On this scale, psychological, social, and occupational functioning is assumed to occur on a hypothetical continuum which ranges from 1 which indicates severe difficulties in functioning and severe mental illness, to 100 which indicates superior functioning and excellent mental health.

2.3. Inter-rater reliability

A team of five researchers coded witness statements (HD, DNM, KC, AOD, and LB). To maintain consistency in coding frame usage, all researchers received initial training, and had regular meetings in which coding decision disagreements were resolved through discussion. Pairs of raters independently coded a sample of 100 (44.4% of 225) witness statements. There was 90.9% inter-rater agreement, and the average Krippendorf's alpha value was 0.82 (Hayes & Krippendorff, 2007).

2.4. Scale development

Scales were developed to evaluate the six variables in the mediational model in Fig. 1.

The *maltreatment* scale was the sum of scores from codes for physical, sexual and emotional abuse in care; physical and emotional neglect in care; duration of physical, sexual and emotional abuse in care; severity of physical and sexual abuse in care; and number of perpetrators of physical and sexual abuse in care. On this scale, higher scores indicated more maltreatment experiences in child care.

The *risk factors* scale was the sum of scores from codes for number of care placements, and for composite variables indicating the number of negative factors in the child care environment, the number of adverse disclosure-related processes, the number of birth family adversities, the number of types of maltreatment within the birth family, the number of types of additional traumatization, and the number of neurodevelopmental disorders. On this scale, higher scores indicated more risk factors.

The *protective factors* scale was the sum of scores from codes for supportive relationships with parents, peers, sibling, carers, partners, mental health professionals, or self-help groups; support from telephone helplines; constructive coping; useful skills including academic, occupational, sporting, musical or artistic skills; effective disclosure; and effective legal action. On this scale, higher scores indicated more protective factors.

The *physical health problems* scale was the sum of scores from codes for frequent illness, failure to thrive, pain conditions,

genitourinary conditions, cancer, heart disease, diabetes, and frequent hospitalization. On this scale, higher scores indicated more physical health problems.

The *mental health problems* scale was the sum of scores from codes for any mental health problem, depression, anxiety, post-traumatic stress disorder (PTSD), eating disorders, personality disorders, sleep problems, psychosomatic conditions, alcohol and drug problems, self-harm, suicidal ideation, psychotropic medication, hospitalization for mental health problems, electroconvulsive therapy, and being forcibly sedated by injection in a psychiatric facility. On this scale, higher scores indicated more mental health problems.

The *psychosocial problems* scale was the sum of scores from composite codes for career development problems, trust problems, romantic relationship problems, psychosocial adjustment problems in child care, parenting and child-focused problems, and self-regulation problems. On this scale, higher scores indicated more psychosocial problems.

There was good internal consistency, with Cronbach (1951)'s alpha coefficients $\alpha \geq 0.70$, for the mental health problems scale ($\alpha = 0.72$), the psychosocial problems scale ($\alpha = 0.72$), and the maltreatment scale ($\alpha = 0.70$). There was a moderate degree of internal consistency, with Cronbach's alpha coefficients ranging between 0.50 and 0.60, for the physical health problems scale ($\alpha = 0.58$), the risk factors scale ($\alpha = 0.55$), and the protective factors scale ($\alpha = 0.54$).

2.5. Ethics

This research program was conducted with ethical approval of the UCD Human Research Ethics Committee. Witness statements were sent from SCAI to the UCD research team with survivors' consent. All members of the UCD research team signed SCAI confidentiality declarations.

2.6. Data analysis overview

Descriptive analyses were initially performed to profile the sample. Correlational analyses were then conducted to determine the association between scores on scales assessing maltreatment in child-care, and risk and protective factors on the one hand, and outcomes in the domains of physical health, mental health and psychosocial adjustment, on the other. The use of summary scales in these analyses reduced the inflated risk of type 1 error associated with computing large numbers of correlations between many variables that were subsumed within the six summary scales described above. Structural equation modeling (SEM) was used to test the mediation model in Fig. 1 using AMOS version 24. The following indices were used to determine the model fitting adequacy: chi-square (χ^2), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Tucker Lewis index (TLI), Goodness-of-Fit Index (GFI) and Adjusted-Goodness-of-Fit Index (AGFI). Kline (2016) suggests that a good model fit is indicated by a nonsignificant χ^2 value ($p > 0.05$); RMSEA and SRMR values < 0.08; and GFI, AGFI and CFI values > 0.90. GFI, AGFI and CFI values ≥ 0.95 indicate excellent model fit (Hu & Bentler, 1999). The bootstrapping method with bias-corrected confidence interval (CI) procedures was applied. The 95% CIs of the total, direct and indirect effects were calculated using 2000 bootstrapped resamples drawn from the initial sample. With mediation bootstrapping, observations were repeatedly randomly sampled with replacement from the initial sample and Preacher and Hayes (2004)'s statistic was computed in each re-sample to determine if the mediation model was statistically significant. Computing over thousands of bootstrapped resamples provided an approximation of the sampling distribution of Preacher and Hayes's statistic used to test for significance. Since SEM is highly sensitive to outliers, data were screened for outliers using the Mahalanobis (1936) distance. This resulted in removing two cases which were extreme outliers. Thus, the final sample used for SEM consisted of 223 cases.

3. Results

3.1. Profile of survivors of institutional abuse

Descriptive statistics (percentages, means and standard deviations) were calculated to determine the profile of the sample of 225 survivors.

3.2. Demographic characteristics

From Table 1 it may be seen that the sample was predominantly male, aged, on average, in the late 50 s, from a range of socio-economic groups, with a range of levels of educational achievement. About half were married or cohabiting, and about half were single. About two thirds had children whom they had raised.

3.3. Child care history

From Table 2 it may be seen that parental neglect was the most common reason for placement in child care, with about half of participants being placed for this reason. On average participants had entered care when they were about six years and ten months old, and spent 8 years in care, in 3–4 placements. Almost half had mainly been in Catholic religious residential care and about a third in non-religious residential care. Most survivors left care because they were too old to remain there, or because they returned home.

Table 1
Demographic characteristics.

Variable		f or M	% or SD
Gender (proportion female)		76	33.80
Age		58.46	10.81
Socio-economic status	Unemployed	45	20.00
	Routine occupations	8	3.60
	Semi-routine occupations	8	3.60
	Technical occupations	17	7.60
	Intermediate occupations	7	3.10
	Lower managerial, administrative, and professional occupations	22	9.80
	Higher managerial, administrative, and professional occupations	13	5.80
	Retired	26	11.60
	Unknown	79	35.10
Educational level	None	38	16.90
	Final junior school exam	18	8.00
	O levels or mid-high school exam	23	10.20
	A levels or final high school exam	8	3.60
	Certificate or diploma or apprenticeship exam	33	14.70
	Primary degree (e.g. BA)	24	10.70
	Higher degree (e.g. MA)	8	3.60
	Unknown	73	32.40
Marital status	Single and never married or cohabited	23	10.20
	Single and separated or divorced	74	32.90
	Single and widowed	12	5.30
	Married or cohabiting in first long-term relationship	68	30.20
	Married or cohabiting in second or later long-term relationship	40	17.80
	Unknown	8	3.60
Parental status	Not a parent	41	18.20
	Is a parent but children adopted	2	0.90
	Is a parent but children in care for most of the time	6	2.70
	Is a parent but children with other parent most of the time after separation or divorce	20	08.90
	Is a parent but children with other family member most of the time	8	3.60
	Is a parent and raised own children most of the time	146	64.90
	Unknown	2	00.90

Note: f = frequency. % = percent. M = mean. SD = standard deviation. Socio-economic status was rated with the National Statistics Socio-economic Classification (Office for National Statistics, 2010).

3.4. Maltreatment in long-term child care

From Table 3 it may be seen that almost all survivors had been physically and emotionally abused while in care; about half had been sexually abused or emotionally neglected; and about a third had been physically neglected. The relatively high level of physical and emotional abuse and relatively low level of physical neglect within the sample, suggests that the ethos of child care institutions in which survivors were placed prioritized meeting children's basic physical needs, rather than their psychological needs. Almost all survivors had experienced two or more forms of maltreatment, and about half (56%) had experienced both physical and sexual abuse. With regard to abuse severity, for just over three quarters of survivors, severe physical abuse (involving lasting bodily harm) was the worst type of physical abuse that they had endured, and a fifth had suffered penetrative sexual abuse. With regard to the duration of abuse, about three quarters of survivors had been physically and emotionally abused many times; and about a quarter had been sexually abused many times. About four fifths of survivors had been abused by multiple perpetrators. The most common perpetrators of physical or sexual abuse were non-religious residential care staff, accounting for about two-thirds of cases. About a quarter of survivors were abused by carers and also by peers or siblings. In about one in ten cases, survivors thought that the perpetrators who abused them had significant adjustment problems such as addiction, mental health difficulties, or criminality. The majority of survivors identified no clear triggers for episodes of physical or sexual abuse. Where triggers were identified, disobedience was the most common trigger for physical abuse, and isolation for sexual abuse.

3.5. Physical and mental health

From Table 4 it may be seen that survivors had experienced a wide range of physical and mental health problems over the lifespan. Almost half had suffered frequent physical illness, and about four fifths reported mental health problems. Of these, PTSD and depression were the most common. About a third had harmed themselves or had suicidal thoughts. Just under a half of survivors had undergone psychiatric treatment.

Fig. 2 presents lifetime prevalence rates of mental health problems of survivors of child abuse in long-term care in Scotland and participants in international community samples. Community sample prevalence rates are from 26 World Mental Health Surveys

Table 2
Childcare history.

Variable		f or M	% or SD
Age when entered care	Age in years	6.76	4.01
Length of time in care	Time in years	8.02	4.83
Main type of care	Catholic residential care	101	44.90
	Non-religious residential care	71	31.60
	Non-religious foster care	20	8.90
	Boarding school	15	6.70
	A mix of placements	12	5.30
	Protestant residential care	6	2.70
Number of care placements		3.59	2.82
Adoption failure		3	1.30
Separated from siblings		137	60.90
Reason for entering care	Neglect (parents unable to cope)	115	51.10
	School non-attendance	16	7.10
	Petty crime	14	6.20
	Attending Boarding school	14	6.20
	Illegitimate	4	1.80
	Physically abused by parents	4	1.80
	Parents died	3	1.30
	Abandoned/disowned by parents	2	0.90
	Sexually abused by parents	1	0.40
	Unknown	52	23.10
Reason for leaving care	Too old to stay in care	76	33.80
	Returned to birth family home	62	27.60
	Sentence over	27	12.00
	Ran away	14	6.20
	Expelled	7	3.10
	Other	7	3.10
	Institution closed down	1	0.40
	Unknown	31	13.80

Note: f = frequency. % = percent. M = mean. SD = standard deviation.

(Koenen et al., 2017) and 85 international surveys (Steel et al., 2014). Chi square tests showed that the prevalence rates of psychiatric disorders in survivors of child abuse in long-term care were significantly ($p < .01$) higher than those in international community samples. The difference in prevalence rates for all disorders ranged from 19% to 55%. For any mental health disorder, the rate for survivors of child abuse in long-term care in Scotland was 55% greater than in community surveys (84% vs. 29%). The rate of PTSD for institutional abuse survivors was 12 times higher than in normal community samples (48% vs. 4%). The rates of depression (41% vs. 10%), anxiety (32% vs. 13%), and alcohol and drug use disorders (36% vs. 11%) of institutional abuse survivors were 2–4 times higher than those in community samples. These vastly differing prevalence rates underline the strong association between institutional child abuse and adverse mental health outcomes.

3.6. Psychosocial problems

From Table 5 it may be seen that survivors had psychosocial problems in six main areas of their lives; career development, trust, romantic relationships, problems while in child care, parenting, and self-regulation. The top three areas in which psychosocial problems occurred were career development, trusting others, and romantic relationships. More than two thirds of survivors had problems in each of these broad areas. Educational and work difficulties were the most common specific career development problems. Difficulty making and maintaining friendships and loss of trust in the system were the most common specific trust problems. The most common specific romantic relationship problems were marital adjustment difficulties, separation and divorce. About half of survivors had experienced psychosocial problems during childhood while in care. About a third had problems in adulthood with parenting and anger control. Almost all had problems in at least one of the six main areas of psychosocial adjustment listed in Table 5, and two thirds had problems in three or more areas.

On the GAF, 80% of survivors obtained scores between 50 and 70 indicating that they showed moderate impairment in global functioning. 5.3% obtained scores below 50 indicating that their global functioning was seriously impaired. Only 14.7% of survivors obtained scores above 70, indicating that they were functioning reasonably well. The mean score on the GAF for all 225 cases was 63.3 (SD = 12.17) with a range from 30 to 100. This mean score indicates that, on average, the sample of 225 survivors had moderate difficulties in global functioning.

3.7. Risk factors

From Table 6 it may be seen that risk factors were classified into 6 broad categories: exposure to a range of negative factors in the child care environment, adverse disclosure-related processes, birth family adversity, maltreatment within the birth family, additional

Table 3
Maltreatment in long-term child care.

Variable		f or M	% or SD
RATES OF FIVE TYPES OF MALTREATMENT IN CARE			
Physical abuse (Includes codes for mild or moderate physical abuse in care and severe physical abuse in care defined below)		215	95.60
Emotional abuse (Frequently non-physically punished, including isolation for long periods, deprived of food for long periods, deprived of clothing or blankets for long periods, denied access to bathroom for long periods. Frequently insulted, humiliated, threatened, ostracized, made to watch siblings or friends being abused, or made to punish siblings or friends)		192	85.30
Sexual abuse (Includes codes for non-contact sexual abuse in care, contact non-penetrative, sexual abuse in care, penetrative sexual abuse in care defined below)		136	60.40
Emotional neglect (Emotionally neglected for more than 6 months or until removed. A daily routine where survivors didn't feel close to, supported by, or loved by carers. This was not an active punishment but due to carer being under-resourced (psychologically or financially), for example not enough care staff, high staff turnover, poor staff training, depression or other mental health problem, or intoxication with drugs or alcohol)		115	51.10
Physical neglect (Physically neglected for more than 6 months or until removed. A daily routine that involved not having enough to eat, enough clothes to keep warm, a warm safe place to sleep, and wasn't taken to the doctor when sick or injured physically. This was not an active punishment but due to carers being under-resourced)		84	37.30
RATES OF COMBINED TYPES OF MALTREATMENT			
One or more types of maltreatment		225	100.00
Two or more types of maltreatment		206	91.55
Three or more types of maltreatment		172	76.44
Four or more types of maltreatment		98	43.55
Five or types of maltreatment		31	13.77
WORST TYPE OF PHYSICAL ABUSE IN CARE			
Severe physical abuse (Hit or beaten so hard that it left bruises or marks; or required medical treatment (even if that was not provided); being electrocuted, poisoned, made to wash out mouth with detergent, or seriously physically harmed in some other way)		177	78.70
Mild or moderate physical abuse (Hit with fist, belt, strap, stick or hard object)		38	16.90
WORST TYPE OF SEXUAL ABUSE IN CARE			
Contact non-penetrative, sexual abuse in care (Sexual contact, genital contact, or masturbation)		66	29.30
Penetrative sexual abuse in care in care (Vaginal, oral, or anal penetration with penis; or forced to penetrate abuser orally, vaginally or anally with penis)		46	20.40
Non-contact sexual abuse in care (Exhibitionism, voyeurism, or making person 'perform' and be watched)		24	10.70
DURATION OF ABUSE IN CARE			
Duration of physical abuse	Many times, more than a month	173	76.90
	Once, a few times, or less than a month	42	18.70
Duration of sexual abuse	Many times, more than a month	65	28.90
	Once, a few times, or less than a month	71	31.60
Duration of emotional abuse	Many times, more than a month	159	70.70
	Once, a few times, or less than a month	33	14.70
PERPETRATORS OF ABUSE IN CARE			
Relationship to perpetrators of physical or sexual abuse in care	Carers	157	69.80
	Carers and peers or siblings	61	27.10
	Peers	6	2.70
	Siblings	1	0.40
Religious status of perpetrators	Non-religious residential care staff	152	67.60
	Catholic nuns	85	37.80
	Peers	71	31.60
	Catholic brothers	34	15.10
	Foster parents	32	14.20
	Catholic priests	22	9.80
Number of perpetrators of physical or sexual abuse in care	Multiple	190	84.40
	One	35	15.60
Perpetrator problems	Alcohol or drug problem	16	7.10
	Mental health problem	5	2.20
	Criminal record	3	1.30
TRIGGER FOR ABUSE IN CARE			
Main triggers for physical abuse	Disobedience or oppositional behavior	49	21.80
	Trivial or mildly annoying behavior	9	4.00
	Bedwetting	05	2.20
	Not doing chores or jobs properly	1	0.40
	None or unknown	161	71.50
Main triggers for sexual abuse	Isolation	61	27.10

(*continued on next page*)

Table 3 (*continued*)

Variable		f or M	% or SD
	Perpetrator angry because of something the survivor had done	4	1.80
	Perpetrator intoxicated with alcohol or drugs	2	0.90
	None or unknown	158	70.30

Note: f = frequency. % = percent. M = mean. SD = standard deviation.

Table 4
Physical and mental health outcomes.

Variable	f	%
PHYSICAL HEALTH PROBLEMS		
Frequent physical illness	96	42.70
Pain conditions	27	12.00
Genitourinary conditions	14	6.20
Heart disease	13	5.80
Frequent hospitalization for physical health problems	12	5.30
Failure to thrive and weight loss	7	3.10
Diabetes	7	3.10
Cancer	6	2.70
MENTAL HEALTH PROBLEMS		
Any mental health problem	189	84.00
PTSD	107	47.60
Depression	92	40.90
Alcohol and drug problems	82	36.40
Anxiety (excluding PTSD)	72	32.00
Sleep problems	50	22.20
Psychosomatic conditions	18	8.00
Personality disorder	8	3.60
Eating disorders	6	2.70
SUICIDALITY		
Any suicidality	78	34.70
Self-harm	52	23.10
Suicidal ideation	40	17.80
TREATMENT FOR MENTAL HEALTH PROBLEMS		
Any psychiatric treatment	101	44.90
Psychotropic medication	87	38.70
Hospitalization for mental health problems	39	17.30
Forcibly sedated by injection	5	2.20
Electroconvulsive therapy	3	1.30

Note: f = frequency.% = percent.

traumatization outside of the child care facility or in adulthood, and neurodevelopmental disorders and personal vulnerabilities. In nine out of ten cases, three or more of these broad risk factors were present. The top three most common broad risk factors, present in more than four fifths of cases, were exposure to negative factors in the child care environment, adverse disclosure-related processes, and birth family adversity. In these broad categories, particularly common specific risk factors were exposure to a care environment in which child abuse was suspected or known to have occurred; exposure in care to young people with significant adjustment problems; not being protected by carers, professionals, or management of care institutions when they suspected or knew abuse was happening; and having a single parent birth family. Three other broad categories of risk factors were present in between two fifths and half of all cases: maltreatment within birth families; additional traumatization, and neurodevelopmental disorders and personal vulnerabilities.

3.8. Protective factors

From Table 7 it may be seen that protective factors were classified into five categories: useful skills, supportive relationships, constructive coping strategies, effective disclosure, and effective litigation. In eight out of ten cases, two or more of these protective factors were present. The top three most common protective factors, present in about three quarters of cases, were useful skills, supportive relationships, and constructive coping strategies. In the useful skills category, occupational and educational skills were identified as protective factors in between half and two thirds of cases. In the supportive relationships category, relationships with a number of different types of people were identified as helpful in between two and three out of five cases, including, partners, carers, siblings, peers and mental health professionals.

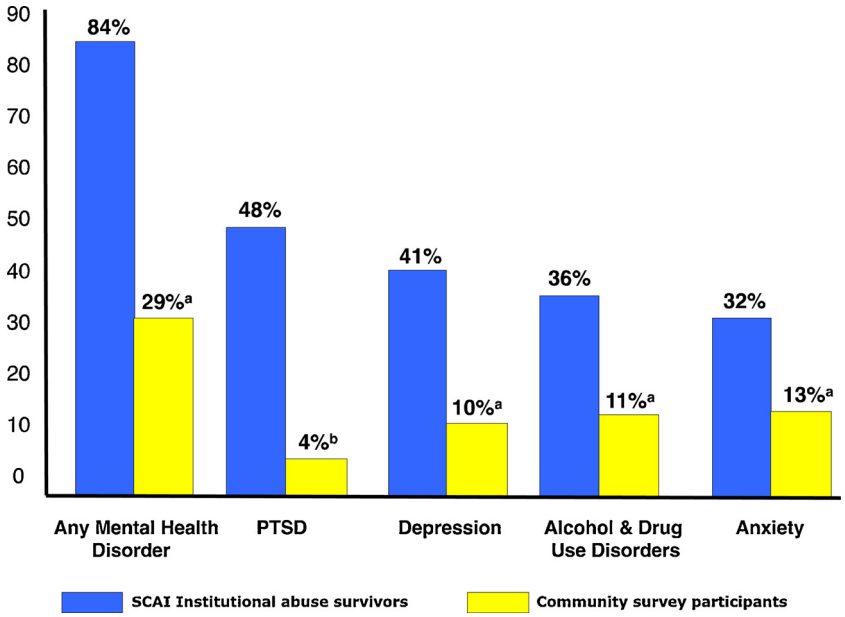

Fig. 2. Rates of adverse mental health outcomes in studies of survivors of child abuse in long−term care and international community surveys. Lifetime prevalence rates found in international community surveys are from references indicated by superscripts: a = Steel et al. (2014). b = Koenen et al. (2017).

3.9. Correlations between adverse childhood experience and outcomes

From Table 8 it may be seen that there were statistically significant positive correlations between maltreatment and psychosocial problems ($r = 0.33$), physical health problems ($r = 0.18$), and mental health problems ($r = 0.17$). However, the largest correlation was with psychosocial problems. The correlations between maltreatment and mental health problems and maltreatment and physical health problems were significantly smaller than that between maltreatment and psychosocial problems (0.17 & 0.18 vs. 0.33, $p < .05$).

There were also statistically significant positive correlations between risk factors and psychosocial problems ($r = 0.53$), mental health problems ($r = 0.42$), and physical health problems ($r = 0.16$). However, correlations between risk factors and psychosocial problems and risk factors and mental health problems were significantly larger than that between risk factors and physical health problems (0.53 & 0.42 vs. 0.16, $p < .01$)

The correlation between risk factors and mental health problems was significantly larger than that between maltreatment and mental health problems (0.42 vs. 0.17, $p < .01$). The correlation between risk factors and psychosocial problems was significantly larger than that between maltreatment and psychosocial problems (0.53 v 0.33, $p < .01$).

Finally, there was an unexpected statistically significant positive correlation between protective factors and mental health problems ($r = 0.17$, $p < .01$).

In summary, these correlational results indicate that, greater maltreatment in long-term child care, and exposure to more risk factors was associated with greater mental and physical health and psychosocial adjustment problems in adulthood. However, the impact of risk factors was greater than that of maltreatment. There was an unexpected finding that greater protective factors were associated with more severe mental health problems.

3.10. Correlations between narrow band variables

A series of ancillary correlational analyses were conducted with three aims. The first was to determine which specific protective factors were associated with mental health problems. This was necessary to find an explanation for the unexpected positive correlation between protective factors and mental health problems. The second was to determine if specific types of maltreatment or risk factors were associated with specific outcomes. Third was to determine if the age at which survivors entered care, child care duration and the number of care institutions in which they were placed on the one hand, were associated with adverse outcomes in adulthood on the other. To reduce the risk of type I error in these analyses a p value of .01 was used, and all correlations mentioned below are significant at $p < .01$.

3.10.1. Correlational analysis of specific protective factors

To determine which specific protective factors were associated with mental health problems, correlations were computed between each item in the protective factor scale and the mental health problems scale. There were significant correlations between mental

Table 5
Psychosocial adjustment outcomes.

Variable	f	%
CAREER DEVELOPMENT PROBLEMS		
Any significant problems with career development	176	78.20
Educational problems	141	62.70
Work problems	90	40.00
Non-violent crime	79	35.10
Imprisoned for non-violent crime	50	22.20
Unemployment	49	21.80
Homelessness	38	16.90
Gambling problems	6	2.70
TRUST PROBLEMS		
Any significant trust-related problems	153	68.00
Difficulties making and maintaining friendships	101	44.90
Loss of trust in the system	94	41.80
Loss of religious faith due to abuse in religious institutions	37	16.40
Stigmatization	36	16.00
ROMANTIC RELATIONSHIPS PROBLEMS		
Any significant problems in intimate relationships	150	66.70
Marital adjustment problems	145	64.40
Separation or divorce	111	49.30
Risky sexual behavior	19	8.40
PROBLEMS WHILE IN CHILD-CARE		
Significant psychosocial adjustment problems while in child care	98	43.60
PARENTING & CHILD-FOCUSED PROBLEMS		
Any significant parenting and child-focused problems	83	36.90
Parenting problems	81	36
Children taken into care	13	05.80
Children have mental health problems	10	4.40
Children have physical health problems	9	4.00
Children have significant psychosocial problems	9	4.00
Children have alcohol and drug problems	4	1.80
SELF-REGULATION PROBLEMS		
Any significant anger and self-regulation problems	72	32.00
Anger control problems	63	28.00
Violent crime	30	13.30
Imprisonment for violent crime	15	6.70
Anger control problems in intimate relationships	11	4.90
Anger control problems with children	6	2.70
NO. OF AREAS IN WHICH PSYCHOSOCIAL PROBLEMS OCCURRED		
No areas	09	4.00
One or more areas	216	96.00
Two or more areas	199	88.44
Three or more areas	150	66.66
Four or more areas	95	42.22
Five or more areas	53	23.55
Six areas	16	7.11

Note: f = frequency. % = percent.

health problems and supportive relationships with self-help groups (r = 0.38), mental health professionals (r = 0.34), and peers (r = 0.23), and between mental health and constructive coping (r = 0.20). This pattern of correlations suggests that survivors with mental health problems accessed services that provided them with protective factors, notably supportive relationships of various sorts and positive coping strategies.

3.10.2. Correlational analysis of specific types of maltreatment

To determine if specific types of maltreatment were associated with specific outcomes, correlations were computed between each type of maltreatment and physical health outcomes, mental health outcomes, and each specific type of psychosocial outcome. A correlation was also computed between total maltreatment, (assessed with a scale that combined all types of maltreatment), and physical health outcomes, mental health outcomes, and each specific type of psychosocial outcome. There were four main findings.

- There were significant correlations between the total score on the maltreatment scale and both career development problems (r = 0.28) and trust problems (r = 0.24), but not other psychosocial problems.
- There were significant correlations between sexual abuse in care and both career development problems (r = 0.20) and self-

Table 6
Risk factors.

Variable	f	%
EXPOSURE TO NEGATIVE FACTORS IN THE CHILD CARE ENVIRONMENT		
Any negative factor within the child care environment	215	95.60
Exposure to a care environment in which child abuse was, suspected, alleged, or known to have occurred.	201	89.30
Exposure to young people with significant adjustment problems while in care	96	42.70
Grooming	51	22.70
Exposure to significant conflict between adult carers in long-term care	17	7.60
ADVERSE DISCLOSURE-RELATED PROCESSES		
Any adverse disclosure-related processes	199	88.40
Not protected by carers, professionals, or management of care institutions when they suspected or knew abuse was happening	171	76.00
Ran away	103	45.80
Didn't disclose abuse for fear of consequences	97	43.10
Perpetrator prevented disclosure	81	36.00
Unsatisfactory litigation	53	23.60
Disclosed abuse and was not believed	51	22.70
Disclosed abuse and was physically abused for lying	22	9.80
Disclosed abuse and was emotionally abused for lying	19	8.40
BIRTH FAMILY ADVERSITY		
Any birth family adversity	193	85.80
Parents, never married, separated or divorced	107	47.60
Father has/had alcohol or drug problems	57	25.30
Mother has/had alcohol or drug problems	37	16.40
Mother deceased	31	13.80
Mother had mental health problems	29	12.90
Father deceased	23	10.20
Mother had physical health problems	22	9.80
Father had mental health problems	11	4.90
Father had physical health problems	8	3.60
MALTREATMENT WITHIN BIRTH FAMILY		
Any type of maltreatment	117	52.00
Emotional neglect	60	26.70
Physical abuse	56	24.90
Physical neglect	49	21.80
Emotional abuse	31	13.80
Sexual abuse	13	05.80
ADDITIONAL TRAUMATIZTION		
Any additional traumatization	99	44.00
Physically abused as a child by a person outside of the child care facility or birth family	44	19.60
Sexually abused as a child by a person outside of the child care facility or birth family	35	15.60
Bullied by peers	29	12.90
Victim of intimate partner violence	26	11.60
Maltreated by teachers	16	7.10
Raped	6	2.70
Mugged	2	0.90
NEURODEVELOPMENTAL DISORDERS AND UNIQUE PERSONAL VULNERABILITIES		
Any neurodevelopmental disorder	92	40.90
Enuresis	81	36.00
Unique characteristics that made child vulnerable to abuse	21	9.30
Dyslexia	11	4.90
Attention deficit hyperactivity disorder (ADHD)	4	1.80
Autism spectrum disorder (ASD)	1	0.40
TOTAL NUMBER OF RISK FACTORS		
One or more risk factor	225	100.00
Two or more risk factors	223	99.11
Three or more risk factors	203	90.22
Four or more risk factors	155	68.88
Five or more risk factors	84	37.33
Six or more risk factors	25	11.11

Note: f = frequency for dichotomous variables. % = percent for dichotomous variables.

regulation problems ($r = 0.20$), but not other psychosocial problems.

- There were significant correlations between emotional abuse in care and both physical health problems ($r = 0.19$) and mental health problems ($r = 0.21$), but not any psychosocial problems.
- There were no significant correlations between physical abuse, physical neglect, and emotional neglect on the one hand, and physical or mental health or psychosocial problems on the other.

Table 7
Protective factors.

Variable	f	%
SUMMARY OF PROTECTIVE FACTORS		
Useful skills	196	87.10
Supportive relationships	172	76.40
Constructive coping	158	70.20
Effective disclosure	24	10.00
Effective legal action	19	8.50
USEFUL SKILLS		
Occupational	147	65.30
Academic	124	55.10
Sporting	78	34.70
Musical or artistic	42	18.70
SUPPORTIVE RELATIONSHIPS		
Partner	63	28.00
Carer	53	23.60
Mental health professional	46	20.40
Sibling	45	20.00
Peer	44	19.60
Self-help group	34	15.10
Parent	24	10.70
Telephone helpline (in childhood)	1	0.40
NUMBER OF PROTECTIVE FACTORS		
No protective factors	5	2.20
One or more protective factors	220	97.77
Two or more protective factors	192	85.33
Three or more protective factors	141	62.66
Four or more protective factors	25	11.11
Five protective factors	1	00.04

Note: f = frequency. % = percent.

Table 8
Correlations between scales assessing maltreatment in child-care, risk and protective factors, and outcomes in the domains of physical health problems, mental health problems, and psychosocial problems.

Outcomes	Maltreatment	Risk factors	Protective factors
Physical health problems	.18**	.16*	.11
Mental health problems	.17**	.42**	.17**
Psychosocial problems	.33**	.53**	−.01

Note: N = 225. **$p < .01$. *p < .05.

In summary, these four findings indicate that maltreatment in care was specifically associated with career development and trust problems. Of the various types of maltreatment, sexual and emotional abuse were particularly strongly associated with negative outcomes. Sexual abuse in care was associated with both career development and self-regulation problems. Emotional abuse was associated with physical and mental health problems.

3.10.3. Correlational analysis of specific risk factors

To determine which risk factors were associated with specific outcomes, correlations were computed between total risk factors and each risk factor on the one hand, and physical health outcomes, mental health outcomes, and each specific type of psychosocial outcome on the other. There were seven main findings.

- There were significant correlations between total risk factors in care and all six specific psychosocial problem areas: career development problems ($r = 0.43$), parenting and child-focused problems ($r = 0.33$), self-regulation problems (r = 0.31), problems when in child care (r = 0.25), trust problems ($r = 0.23$), and romantic relationships problems ($r = 0.18$).
- There were significant correlations between the number of negative factors in the child care environment and both problems when in child care (r = 0.27) and career development problems ($r = 0.17$).
- There were significant correlations between the number of adverse disclosure-related processes and trust problems ($r = 0.29$), career development problems ($r = 0.26$), and parenting and child-focused problems ($r = 0.18$).
- There was a significant correlation between the number of birth family adversities and self-regulation problems ($r = 0.18$).
- There was a significant correlation between the number of types of maltreatment within the birth family and career development problems ($r = 0.18$).

- There were significant correlations between the number of types of additional traumatization and both career development problems ($r = 0.21$) and self-regulation problems ($r = 0.21$).
- There were no significant correlations between the number of neurodevelopmental disorders and any outcome variables.

In summary, these seven findings indicate that the accumulation of multiple risk factors was associated with problems in all areas of psychosocial adjustment. Specific risk factors were associated with specific types of psychosocial adjustment problems. Of all risk factors, the number of adverse disclosure-related processes had the strongest and most wide-ranging association with psychosocial adjustment. It was associated with problems in the areas of trust, career development, and parenting. Of all of the areas of psychosocial adjustment, career development was the specific area most strongly affect by the widest range of risk factors. It had particularly strong associations with the number of negative factors in the child care environment, the number of adverse disclosure-related processes, the number of types of maltreatment within the birth family, and the number of types of additional traumatization.

3.10.4. Correlational analysis of care entry age, care duration, and number of placements and adverse outcome

To determine if the age when survivors entered care, the duration of child care, and the number of care institutions in which they had been placed were associated with adverse outcomes, correlations were computed between these three variables on the one the one hand, and adverse outcomes in adulthood on the other. There were three main findings.

- There were significant negative correlations between age at care entry and frequent hospitalization for physical health problems ($r = -0.26$), trust problems ($r = -0.19$), especially making and maintaining friendships ($r = -0.23$), and anger control in intimate relationships ($r = -0.18$). The younger the age of care entry in childhood, the greater the problems in each of these areas in adulthood.
- There were significant positive correlations between the number of years in care and frequent hospitalization for physical health problems ($r = 0.27$), number of types of psychiatric treatment (including psychotropic medication, hospitalization for mental health problems, electroconvulsive therapy, and forcible sedation) ($r = 0.17$), and psychosocial problems ($r = .17$), especially experiencing stigmatization ($r = 0.18$), and significant problems in intimate relationships ($r = 0.18$). The longer the duration of child care, the more common these outcomes were in adulthood.
- There were significant positive correlations between the number of care institutions in which survivors had been placed and mental health problems ($r = 0.26$), especially depression ($r = 0.23$), personality disorder ($r = 0.23$), and self-harm ($r = 0.25$); and psychosocial problems ($r = 0.45$), especially self-regulation and anger control ($r = 0.29$), parenting and child-focused problems ($r = 0.33$), and career development ($r = 0.39$). A greater number of placements in childhood was associated with greater problems in these areas in adulthood.

In summary, the younger survivors entered care, and therefore the younger the age at which they could potentially suffer institutional abuse, the more likely they were in adulthood to have been frequently hospitalized for physical health problems; to have had trust problems, especially making and maintaining friendships; and to have had anger control problems in intimate relationships. The longer survivors had spent in child care, the more likely they were in adulthood to have been frequently hospitalized for physical health problems, to have received a greater number of types of psychiatric treatment (including psychotropic medication, hospitalization for mental health problems, electroconvulsive therapy, and forcibly sedation), and to have experienced psychosocial problems, especially stigmatization and significant intimate relationship difficulties. The more care institutions survivors had been placed in during childhood, the more likely they were in adulthood to have had mental health problems, especially depression, personality disorder, and self-harm; and psychosocial problems, especially self-regulation and anger control difficulties, parenting problems, and career development problems.

3.11. Model of maltreatment in care, risk and protective factors, and outcomes

SEM results in Fig. 3 showed that the model proposed in Fig. 1 had an excellent fit to data: χ^2 (2) = 4,26, p = 0.12, RMSEA = 0.07, SRMR = 0.03, CFI = 0.99, TLI = 0.90 GFI = 0.99, AGFI = 0.93. The total model accounted for 30% of the variance in psychosocial problems ($p = 0.002$), 14% of the variance in mental health problems ($p = 0.003$), and 4% of the variance in physical health problems ($p = 0.006$). Maltreatment was a positive predictor of protective factors ($\beta = 0.19$, $SE = 0.06$, $p = 0.006$, CI = 0.08 to 0.29) accounting for 4% (p = 0.001) of the variance and of risk factors ($\beta = 0.32$, $SE = 0.07$, $p = 0.001$, CI = 0.21 to 0.43) accounting for 11% (p = 0.001) of the variance.

Psychosocial Problems: Maltreatment was a positive predictor of psychosocial problems ($\beta = 0.32$, $SE = 0.06$, $p = 0.001$, CI = 0.22 to 0.41) prior to considering the mediators. Protective factors negatively predicted psychosocial problems ($\beta = -0.18$, $SE = 0.06$, $p = 0.001$, CI = -0.28 to -0.08), while risk factors positively predicted psychosocial problems ($\beta = 0.46$, $SE = 0.06$, $p = 0.002$, CI = 0.34 to 0.55). When risk and protective factors were jointly considered in the model, maltreatment continued to exert a positive significant effect on psychosocial problems ($\beta = 0.21$, $SE = 0.05$, $p = 0.001$, CI = 0.12 to 0.29). The bootstrapped mediation analysis showed that maltreatment had a significant indirect effect on psychosocial problems through protective and risk factors ($\beta = 0.12$, $SE = 0.04$, $p = 0.001$, CI = 0.06 to 0.18) indicating that risk and protective factors partially mediated the effect of maltreatment on psychosocial problems. Inspection of the individual indirect effects showed that risk factors were a stronger unique mediator of the effect of maltreatment on psychosocial problems ($\beta = 0.15$, $SE = 0.03$, $p = 0.001$, CI = 0.09 to 0.20) than protective factors ($\beta = -0.03$, $SE = 0.02$, $p = 0.008$, CI = -0.06 to -0.01).

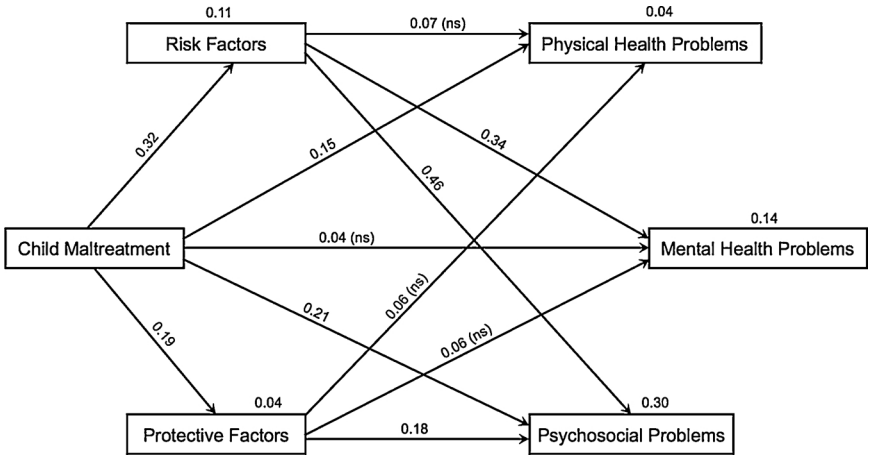

Fig. 3. Mediation analyses predicting mental and physical health problems and psychosocial adjustment problems. Values represent standardized β coefficients. Paths reflect direct effects, i.e., when the mediators are considered in the model. All values are significant unless otherwise indicated. ns = non-significant.

Mental health problems: Maltreatment was a positive predictor of mental health problems ($\beta = 0.16$, $SE = 0.06$, $p = 0.02$, CI = 0.06 to 0.27) prior to considering the mediators. Protective factors did not significantly predict mental health problems ($\beta = 0.06$, $SE = 0.06$, $p = 0.32$, CI = -0.05 to 0.17), while risk factors were a strong positive predictor of mental health problems ($\beta = 0.34$, $SE = 0.06$, $p = 0.001$, CI = 0.23 to 0.44). When risk and protective factors were jointly considered in the model the effect of maltreatment was no longer significant ($\beta = 0.04$, $SE = 0.07$, $p = 0.51$, CI = -0.06 to 0.15) indicating the presence of a full mediation. As expected, the indirect effect of maltreatment on mental health problems through risk and protective factors was significant ($\beta = 0.12$, $SE = 0.04$, $p = 0.001$, CI = 0.07 to 0.19). However, inspection of the individual indirect effects showed that only risk factors significantly mediated the path from maltreatment to mental health problems ($\beta = 0.11$, $SE = 0.02$ $p = 0.001$, CI = 0.04 to 0.12), while protective factors did not significantly contribute to the total indirect effect ($\beta = 0.01$, $SE = 0.009$, $p = 0.21$, CI = -0.004 to 0.02). This indicates that the presence of risk factors fully mediated the effect of maltreatment on mental health problems.

Physical health problems: Maltreatment was a positive predictor of physical health problems ($\beta = 0.18$, $SE = 0.06$, $p = 0.01$, CI = 0.07 to 0.28) prior to considering the mediators. However, neither protective factors ($\beta = 0.06$, $SE = 0.06$, $p = 0.33$, CI = -0.05 to 0.17) nor risk factors were significant predictors of physical health problems ($\beta = 0.07$, $SE = 0.01$, $p = 0.29$, CI = -0.03 to 0.17), which resulted in a non-significant indirect effect ($\beta = 0.03$, $SE = 0.02$, $p = 0.13$, CI = -0.003 to 0.08). This finding suggested that the effect of maltreatment on physical health problems was not mediated by the presence of risk and protective factors.

In summary there were four key findings. First, the effect of maltreatment in care on psychosocial problems was mediated by both risk and protective factors. Second, the effect of maltreatment in care on mental health problems was mediated by risk factors, but not protective factors. Third, child maltreatment in care had a direct effect on physical health which was not mediated by risk or protective factors. Fourth, the effect of risk factors on mental health and psychosocial problems was greater than that of maltreatment, and protective factors had a limited impact on adverse outcomes.

4. Discussion

The first aim of this study was to profile the experiences of survivors of physical and sexual abuse who had been maltreated in long-term child care in Scotland. The profile we established was an important novel finding of this study, since it showed, for the first time, that the outcomes of survivors of institutional abuse in Scotland is similar to that documented in other countries (Carr et al., 2018c). We found that the sample of 225 survivors had been in care in predominantly Catholic and non-religious residential institutions in Scotland for an average of 8 years, having entered at an average age of 6.8 years. They had all suffered multiple forms of maltreatment, with physical and emotional abuse being the most common. The majority were abused on multiple occasions by multiple perpetrators. In addition to suffering maltreatment, almost all had also been exposed to two or more risk factors that rendered them vulnerable to negative outcomes. In order of frequency these were: exposure to a range of negative factors in the child care environment, adverse disclosure-related processes, birth family adversity, maltreatment within the birth family, additional traumatization outside of child care facility or in adulthood, and neurodevelopmental disorders and personal vulnerabilities. Across the lifespan survivors had negative outcomes in mental health (84.0%), physical health (42.7%), and psychosocial adjustment (96.0%). The most common physical health complaint was frequent illness. The most common mental health problems were PTSD and depression. The rate of mental health problems among survivors of child abuse in long-term care in Scotland was 55% greater than in international community surveys (84% vs. 29%). The most common psychosocial adjustment difficulties were career development problems, and problems trusting other people. Almost all survivors had one or more protective factors. The most common were the development of useful skills, and supportive relationships.

The second aim was to determine the correlations between maltreatment in child-care, and risk and protective factors on the one hand, and outcomes in the domains of physical health, mental health and psychosocial adjustment, on the other. This analysis led to a number of important novel findings. We found that, in this Scottish sample, exposure to more types of maltreatment and more severe abuse in long-term child care was significantly associated with greater mental and physical health and psychosocial adjustment problems in adulthood. There was also a significant association between the cumulative number of abuse-related risk factors and negative outcomes in the areas of physical and mental health and psychosocial adjustment. A greater number of risk factors was associated with more negative outcomes. Risk factors included negative factors in the child care environment, adverse disclosure-related processes, birth family adversity, maltreatment within the birth family, additional traumatization outside of child care facility or in adulthood, and neurodevelopmental disorders and personal vulnerabilities. The association between the cumulative number of risk factors and negative outcomes, was significantly stronger than the association between maltreatment and outcome. This was a particularly important finding, because it means that prevention programs must target not just abuse, but also risk factors such as negative factors in the child care environment and additional traumatization outside the child care facility.

Ancillary correlational analyses yielded the following significant and novel findings. Maltreatment in long-term care was specifically associated with two main psychosocial problems: career development and trust problems. Of the various types of maltreatment, sexual and emotional abuse were particularly strongly associated with negative outcomes. Sexual abuse in care was associated with both career development and self-regulation or anger control problems. Emotional abuse was associated with physical and mental health problems. The accumulation of multiple risk factors was associated with problems in all areas of psychosocial adjustment. Specific risk factors were associated with specific types of psychosocial problems. Of all risk factors, the number of adverse disclosure-related processes had the strongest and most wide-ranging association with psychosocial adjustment. It was associated with problems in the areas of trust, career development, and parenting. Of all of the areas of psychosocial adjustment, career development was the specific area most strongly affected by the widest range of risk factors. It had particularly strong associations with the number of negative factors in the child care environment, the number of adverse disclosure-related processes, the number of types of maltreatment within the birth family, and the number of types of additional traumatization. These findings underline the importance of making the abuse disclosure process as facilitative as possible, and of addressing career development, relationship and parenting issues, as well as physical and mental health problems in programs for adult survivors of abuse in child care. We also found that entering care at an early age, spending longer in care, and having multiple placements were associated with a variety of adverse outcomes in adulthood across the domains of physical and mental health and psychosocial adjustment, a finding consistent with the international literature (Jones et al., 2011).

The third aim of the study was to determine whether risk and protective factors mediated the effect of child maltreatment on outcomes in the domains of physical and mental health problems and psychosocial adjustment problems. We found that the effect of maltreatment in care on psychosocial problems was mediated by both risk and protective factors; and on mental health problems was mediated by risk factors, but not protective factors. Maltreatment in care had a direct effect on physical health which was not mediated by risk or protective factors. This was the first model in the literature to show that the mediational pathway from maltreatment to outcome depends on the type of adverse outcome assessed. It was also the first model to show that the effects of the cumulative number of risk factors on adverse mental health and psychosocial outcomes was greater than that of maltreatment, and that protective factors had a limited impact on adverse outcomes.

There was an unexpected statistically significant positive correlation ($r = 0.17$) between the mental health problems and protective factors scales. This was due to significant correlations between the mental health problems scale and certain codes that constituted the protective factors scale, namely supportive relationships with self-help groups ($r = 0.38$), mental health professionals ($r = 0.34$), and peers ($r = 0.23$), and using constructive coping ($r = 0.20$). There are three possible explanations for this pattern of correlations. The first, and most likely explanation, is that survivors with mental health problems accessed services that provided them with protective factors, including supportive relationships and positive coping skills. The second explanation is that supportive relationships and positive coping strategies exacerbated mental health problems. The third explanation is that some unknown third factor, for example a genetic or environmental factor or personality trait, caused both the mental health problems and protective factors. The second and third explanations, to us, seem unlikely.

The chief limitations of the study were the unrepresentativeness of the sample, the unstructured nature of the interviews, and the retrospective research design. The sample was a self-selected cohort of survivors who made witness statements at the SCAI. It is not clear the extent to which it is representative of all survivors of abuse in long-term care in Scotland. Females (33.8%) and survivors of abuse in protestant child care institutions, such as Quarriers (2.7%) appear to be under-represented in the sample.

Because interviews were unstructured, and not all survivors were asked about all variables, there was a high proportion of missing data on variables such as socio-economic status, educational level, and reasons for entering care. Because interviews were unstructured there also was no information on the number of survivors who were asked about each variable in the coding frame; and for any specific variable, the extent to which similar or different sorts of questions were asked. This means that there was a lack of certainty about how many data points on each variable were missing, and the extent to which available data on a specific variable were exactly comparable. Having said that, all interviews covered the same broad domains of child abuse in residential child care, the circumstances surrounding abuse, attempts at self-protection and disclosure, witnesses' perceptions of the impact of abuse on their lives, and involvement with services to address the outcome of traumatization. Therefore, it is very likely that there were relatively few missing data points in the areas of maltreatment, risk and protective factors and outcomes, and that, in broad terms, data on variables in the coding frame were comparable across SCAI cases.

The fact that interviews were unstructured meant that the way constructs (for example, psychiatric disorders) were assessed differed from the way they were assessed in other studies. One consequence of this, was that differences between the Scottish sample

and other samples of survivors, or community samples on any variable may have reflected differences in the way in which the variable was assessed, rather than differences between the two samples on the variable in question. Having said that, on particularly important outcome variables, the rates in the Scottish and in other samples of survivors of institutional abuse were remarkably similar. For example, the rate of mental health problems in the Scottish sample was 84.0% and in an Irish sample of survivors of institutional abuse (Carr et al., 2010) was 81.8%. The rate for having children taken into care was 5.8% in the Scottish sample and 4.1% in the Irish sample.

The retrospective design of the study allowed for the identification of correlations between accounts of institutional child abuse and adverse outcomes in adulthood. However, the retrospective design did not allow definitive conclusions to be drawn about the extent to which adverse outcomes in adulthood were caused by child abuse. There are other possible explanations for correlations between institutional child abuse and adverse outcomes. For example, adverse outcomes in adulthood could have been caused by trauma that occurred before or after abuse in long-term care, or pre-existing constitutional vulnerabilities to particular sorts of physical or mental health problems. Furthermore, correlations between child maltreatment and adverse outcomes may reflect inaccurate or distorted memories due to the long time lapse since the abuse occurred, or the impact of current mental health problems on memory of adverse childhood experiences. Having said that, the hypothesis that the association between institutional abuse and adverse outcomes reflects a causal link is supported by the fact that prospective studies have found links between child abuse and adverse outcomes (Carr et al., 2018a).

The main strengths of our research were the scale of the study, the quality of the witness statements, the comprehensiveness of the coding frame, the inter-rater reliability of data extracted from witness statements, and the robustness of the statistical methods used for data analysis. Ours was a very large investigation involving 225 survivors. The witness statements constituted a very rich data source. These statements were based on lengthy interviews conducted by trauma-informed experts, in a context where survivors were highly motivated to give accurate, detailed, comprehensive accounts of their experiences of abuse in long-term child care and its impact on their lives. The coding frame used to extract data from witness statements was very comprehensive. It contained codes in the domains of demographic characteristics, child care history, maltreatment experiences, a wide range of adverse outcomes, and risk and protective factors. There was a high degree of inter-rater reliability.

The association which we found between child abuse in long-term care and negative physical health, mental health, and psychosocial adjustment outcomes in Scottish survivors of institutional abuse highlight the importance of implementing evidence-based child protection policies and practices to prevent maltreatment and treat child abuse survivors. Providing support and clinical services to children and vulnerable birth families in their homes and communities may prevent children from having to enter institutional care, reduce the risk of institutional abuse, and lead to better long-term outcomes. For children in care, child abuse prevention programs should aim to eliminate or reduce risk factors, especially negative factors in the child care environment (such as exposure to young people with significant adjustment problems), adverse disclosure-related processes (such as not being believed and protected by non-abusing carers or professionals), and additional traumatization outside of child care facility or in adulthood (such as bullying). Evidence-based trauma-focused treatment should be offered to child abuse survivors, with access though agencies that provide services not just for mental health problems, but also for physical health problems (especially frequent illness and pain-disorders) and psychosocial difficulties (such as unemployment, relationship difficulties, and parenting problems). For front-line child care staff and foster parents, selection, training, and supervision procedures should optimize their child protection skills, and support 'whistle blowing' when child maltreatment by others is suspected. Removal of children from families in which they have been maltreated, and placing them in institutions where there is a risk of experiencing further maltreatment is unacceptable. Therefore, it is essential that quality assurance and independent inspection and regulation programs that optimize child protection be implemented in religious and secular organizations that provide long-term residential or foster care. The lack of prospective studies, necessary for establishing causal links between maltreatment and outcomes for abuse survivors, underline the importance of conducting such longitudinal studies on the effects of child abuse in long-term care.

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