SFI THE DANISH NATIONAL CENTRE FOR SOCIAL RESEARCH

Mogens Nygaard Christoffersen

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INVISIBLE CHILD MALTREATMENT AND LONG-TERM SOCIAL HARM

A SOCIAL PSYCHOLOGICAL STUDY OF PTSD BASED ON NATIONAL SAMPLES

RESEARCH DEPARTMENT OF CHILDREN AND FAMILY

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Invisible child maltreatment and long-term social harm:

A social psychological study of PTSD based on national samples[1]

Mogens Nygaard Christoffersen
SFI – THE DANISH NATIONAL CENTRE FOR SOCIAL RESEARCH[2]

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Abstract

Research questions

Research on child maltreatment has suggested that children exposed to abuse and neglect exhibit various social, cognitive and emotional developmental problems. The paper explores long-term consequences and addresses the following questions: how many is exposed to child maltreatment without the knowledge of the local authorities? Will young adults suffer from PTSD (post-traumatic stress disorder), if they have been exposed to child maltreatment? Will social support from a significant other reduce the developmental problems despite all odds?

Method

Three separate datasets were used: A sampling frame was established on the basis of a nationwide register including all children born in 1984 (N=2,989). The sample was a stratified random probability sample of adolescents born in 1984. Another sample of 900 children was drawn at random among social services cases and evaluated. The third consisted of hospital registers including all children born 1994-2006 which was analyzed to estimate the number of cases of child maltreatment known to the local authorities and the hospitals' wards (N=914,800 children).

Findings

Most child-maltreatment is invisible for local authorities and hospital wards. While 5.6 percent of the birth cohort experienced physical abuse only 1.1 percent of a birth cohort was known to the local authorities, and only 0.1 percent of a birth cohort registered at a hospital ward. Less than half of child maltreatment known to the local authorities was reduced according to their files.

The multivariate study found that child maltreatment is significantly associated with high risk of PTSD in young adults when interviewed 25-years old, mediators or other risk factors taken into account.

The study confirms that social support for great many of the young adults is associated with a reduced risk of PTSD symptoms even when experienced poor parenting with the destructiveness of physical abuse, sexual assault, psychological maltreatment and physical neglect. ADHD symptoms turn out to be associated with later PTSD also when accounted for poor parenting and other risk factors. The study confirms that social support is statistical mediator between child maltreatment (abuse and neglect) and later PTSD reactions among young adults.

[1] The paper has been accepted for an oral presentation at the ISPCAN European Regional Conference in Tampere, Finland, 18-21st September 2011. A previous version of the paper was presented at *The York Deviancy Conference, 29 June – 1 July 2011.*

[2] SFI – THE DANISH NATIONAL CENTRE FOR SOCIAL RESEARCH, HERLUF TROLLES GADE 11, DK-1052 COPENHAGEN K, DENMARK,
TEL (+45) 33 48 08 83, MC@SFI.DK WWW.SFI.DK

Introduction

Post-traumatic stress disorder (PTSD) is found in studies of disasters, earthquakes, war and other life-threatening experiences (Bodvarsdottir & Elklit, 2004; Yule, 2002). The traumas most commonly associated with PTSD are combat exposure and witnessing among men, and rape among women (Kessler m.fl., 1995). Recent studies have also found PTSD symptoms in children exposed to major stressors e.g. child abuse, sexual, physical and emotional abuse (Schneider, Baumrind & Kimerling, 2007), or child witnesses to mother assault (Lehmann, 2000; Lehmann, 1997). Being exposed to multiple traumatic events was associated with an increase in risk for PTSD (Elklit, 2002; Schneider, Baumrind & Kimerling, 2007). PTSD is only one among other associated reactions on adolescent exposed to child abuse. Anxiety, depression, and externalizing behavior is also recognized among victims of child abuse (Kiser m.fl., 1991).

The rationale of PTSD is the exposure to a life threatening stressor or serious injury to self or others resulting in extreme fear, helplessness or horror (Lehmann, 2000). While psychological problems have long been known among war veterans under such labels as 'shell shock', 'war neurosis,' and 'combat fatigue,' PTSD was first conceptualized in response to observations of Vietnam veterans (Kulka m.fl., 1990). Subsequently, the DSM-III were revised to include criteria specific to children in the DSM-III-R (American Psychiatric Association, 1987).

The pattern of PTSD symptoms falls in three clusters: first, intrusive thoughts about the traumatic event; second, emotional avoidance of reminders; third, physiological hyper arousal (American Psychiatric Association, 2000; Yule, 2002).

However, the question for social psychology is whether stressors as child maltreatment have long-term consequences of PTSD among young adults or could other family members mitigate the reactions or are there other known risk and protective factors? Social support in crisis is one of the often mentioned mediators and it has been useful in treating PTSD (Joseph, Williams & Yule, 1992; Porritt, 1979). In many studies social support reduce the effect of distress on developing post-traumatic symptoms after experiencing e.g. combat, disaster, burn injury, and HIV (Elklit, Pedersen & Jind, 2001). Social support is therefore seen as a possible mediator of distress among people exposed to various forms of social harm (Yarcheski & Mahon, 1999).

Social support is leading the individual to believe that he or she is cared for, loved, esteemed, and valued. The relationship is characterized as emphatic, understanding, of respect, and of constructive genuineness (Cobb, 1976; Porritt, 1979). Assessing a child's social support system could include e.g. helpful people, material aid or advice or counseling, empathic listening, assistance in problem solving, reassurance of worth, affirmation and protection (Belle, 1989; Thompson, 1995).

For some children a source of social support could be found in everyday life in school. Accordingly, peer status in school or poor school performance seems to be strong factors for predicting future mental ill-health according to Swedish studies, when other background factors were accounted for (Almquist, 2009; Jablonska m.fl., 2009; Modin, Ostberg & Almquist, 2011). Consequently, it is suggested that a fair school performance could be a protective factor for children living under risk environment (Socialstyrelsen, 2010).

In order to isolate the influence from child-maltreatment, other life stressors such as other trauma and life events must be accounted for. For example children with ADHD (attention deficit hyperactivity disorder) seems to be in a more vulnerable position than children of the same age because they have a higher risk of child maltreatment, low school achievements, and a dramatically elevated risk of getting into conflicts with

peers and subsequently socially isolated during childhood (Pelham, Fabiano & Massetti, 2005). ADHD and PTSD are the most commonly diagnosed disorders in sexually abused children. Similarities between ADHD symptoms and PTSD symptoms may hinder the routine inquiry of traumatic experiences in children with ADHD symptoms (Famularo, Kinscherff & Fenton, 1992; Glod & Teicher, 1996; Weinstein, Staffelbach & Biaggio, 2000).

There are other social-psychological group processes that may have an influence on individual's ability to cope with severe stressors. The two most destructive processes are parental psychological maltreatment and being bullied in school. Parental psychological maltreatment, when children are told in many ways that they are unwanted, unloved and worthless, is known to have this destructive effect. A similar destructive group-process is being bullied in school which includes negative actions directed at one individual and repeated over time, unprovoked attacks, social isolation, humiliation, name-calling and ridicule (Nicol, 2002; Olweus, 2003; Olweus, 1994; Olweus, 1995).

Social support is a dimension with many faces and the level of social support could vary between environments e.g. in the family or in school. While social support lead the individual to believe that he or she is cared for, esteemed, valued, and being valued, the relation may lead to positive results despite other constrains.

Child maltreatment is often hidden and invisible which makes it far more damaging because the child is isolated. Isolation is a hinder of getting counseling, empathic listening, assistance in problem solving, reassurance of worth, affirmation and protection.

We will therefore focus our analysis on three main questions: The first line of scientific questions is: what is the incidence of child maltreatment? Are the child protective services aware of the full picture? And how many is discovered in the hospital wards compared to information from the victims?

The second question theme is: will children exposed to child maltreatment have an increased risk of PTSD symptoms as young adults? And the third theme is: will social support from a significant other, turn out to be mediator despite the bad odds?

Data and sampling

The theoretical framework of the study is within the social psychology, but in contrast to most studies in social psychology which are based on laboratory empirical findings, the present study focuses on statistical analysis of national samples in order to answer the research questions.

A sampling frame was established on the basis of a nationwide register including all children born in 1984. The sample was a stratified random probability sample of adolescents born in 1984. The sample consists of 4,718 young people aged 24-25 born in 1984 and interviewed October 2008 to April 2009. The sample was constructed as a stratified random probability sampling across the country based on the personal identity numbers and national population registers. Only young people who have lived in Denmark during their adolescence were included[3]. Children who have been 'in care' or at risk according to the files of local social workers were over sampled. Some of the sample (n=242) could not be interviewed because of handicap, sickness, death, moved abroad, or language difficulties. The survey then obtained a 67 % response rate among the remaining sample which measures up to 2,980 interviewed persons.

[3] The study includes only children present in the country 1st January 1985 and 1st January 2003 according to registers.

The duration of the interview was estimated to 43 minutes. The personal interviews were conducted as telephone interviews or residential interviews if telephone interviews could not been obtained. Experiences show that greater interviewer effect is found in case of personal interviews compared to telephone interviews if embarrassing, social disadvantageous questions are asked (Christoffersen, 1984). The personal interviewing in the homes was using a so called CAPI method (computer assisted personal interview). Since some of the questions could be seen as embarrassing or social labeling these were filled out on the laptop by the interview person himself/herself while the interviewer were waiting with no knowledge of neither the questions nor the answers given. The interview method has been used and evaluated in a similar British study exploring the same age group and studying the same issues as the present study (Cawson, 2002; Cawson m.fl., 2000). The CAPI- method has been shown to give more honest answers in a study of the use and abuse of drugs (Brooker & Kelly,). After the interview, the interviewed persons were offered a telephone number to a help line with a professional psychologist.

Another sample of 1,132 children was drawn at random among social services cases and evaluated 2002. The final size of the sample they were reporting on was 900 children. There were no significant differences between respondents and non-respondents as to gender and age of the children. Caseworkers from municipalities with a small number of inhabitants (viz. 10,000 inhabitants) were more reluctant to participate in the study than caseworkers from larger municipalities. This resulted in a significant underrepresentation of children from small municipalities (Christoffersen, 2002; Christoffersen & DePanfilis, 2009).

All hospital registers about all children born 1994-2006 were included to estimate how many cases of child-maltreatment was known to the hospitals (N=914,800). The children are being followed through all the years which give around 7,110,000 person-years (Christoffersen, 2010).

Measures

PTSD (Post-traumatic Stress Disorder).The pattern of post-traumatic stress disorder falls in three clusters: first, intrusive thoughts about the traumatic event; second, emotional avoidance of reminders; third, physiological hyper arousal (American Psychiatric Association, 2000; Yule, 2002). There are coded for PTSD symptoms if at least 2 of the following 4 questions have affirmative answers. The interviewers presented the following introduction: Have you ever experienced unpleasant incidences which you sometimes recollect? The four questions were: 1) Have you ever experienced an event which gives distressing dreams or intrusive thoughts in which the trauma are expressed within the last month. 2) Have you avoided thoughts and situations associated with the trauma within the last month? 3) Have you persistently been alert or had increased arousal within the last month? 4) Have you felt detachment or estrangement from others within the last month? c.f. page 468 in (American Psychiatric Association, 2000).

Trauma and life events. The respondents were asked fourteen questions about traumatic life events they had experienced directly or indirectly (i.e. having a family member or friend close to them experience an event). The events were selected from Kessler (1995), Elklit (2002) and Lindgaard (2002) covering possible life threatening experiences and experiences such as traffic accidents, other serious accidents, rape, suicide attempt, deaths of close friends or relatives, serious illness, sexual assaults, psychiatric illness, e.g. depression, anxiety (Elklit, 2002; Kessler m.fl., 1995; Lindgaard, 2002). The respondents' own experiences with physical abuse, sexual assaults, neglect, psychological maltreatment, bullying in school, suicide attempt, or eating disorder were not included but measured separately.

ADHD (Attention deficit hyperactivity Disorder). An often used method is the 'Wender Utah Rating Scale' (Wender, Wolf & Wasserstein, 2001). In the present paper we have used 'Adult Self Report Scale' (ASRS v1.1) which has been translated into Danish by a group of Danish researchers (American Psychiatric Association, 2000; Kessler, 2005; Knouse & Safren, 2010; Obel m.fl., 2009).

Social support is defined as a social relation leading the individual to believe that he or she is cared for, loved, esteemed, and valued. The relationship is characterized as emphatic, understanding, of respect, and of constructive genuineness (Cobb, 1976; Porritt, 1979). Assessing a child's social support system could include e.g. helpful people, material aid or advice or counselling, empathic listening, assistance in problem solving, reassurance of worth, affirmation and protection (Belle, 1989; Thompson, 1995). In the study we use the Crisis Support Scale (CSS) developed for adults (Joseph m.fl., 1992; Joseph, Williams & Yule, 1992) that consider the core aspects of crisis support e.g. to have others who are willing to listen, who provide support in emotional and practical ways when necessary, and contact with others in a similar situation (Elklit, Pedersen & Jind, 2001; Lindgaard, 2002).

Physical abuse is defined as an inflicted act causing physical injury to children or an act exposing children to risks of physical injury (Kolko, 2002). Suspected physical abuse requires a comprehensive evaluation and consultation by sub-specialists. The present study is based on interview with the possible offer based on concrete questions about the exposure to physical injuries (see Table 1).

The questions included items such as many bruises on several occasions, being threatened with a knife or a gun, being hit with a hard implement (e.g., coat-hanger, whip), or recorded bruises, bites, burns, broken bones, stab wound, head injuries (e.g., bleeding around the brain). In this way the study attempted to distinguish serious physical abuse from forms of physical chastisement. The items also include exposure of serious risks of potential injury e.g. throwing objects at the child.

Sexual abuse refers to sexually motivated behaviours involving children or sexual exploitation of children (Berliner & Elliott, 2002).

Physical neglect (or neglect) is usually defined as inadequate clothing, inadequate nutrition, poor personal hygiene, failure to provide health care, unsafe household conditions, inadequate supervision, being left with older children of a certain age e.g. the caregiver not knowing of the child's whereabouts, leaving the child with an inappropriate caregiver or chronic truancy (more than 20 days during a year) e.g., if the child missed school frequently without any health reason (DePanfilis, 2000; Dubowitz, 2000a; Macdonald, 2001).

In the present study we had to re formulate these items because 25 year old young adults may not remember these incidents; instead we formulated question about having too much responsibility and being left alone with inadequate nutrition, etc. as a child younger than 12 years old.

Psychological maltreatment was defined as "a repeated pattern of caregiver behavior or extreme incidents that convey to children that they are worthless, flawed, unloved, unwanted, endangered, or only of value in meeting another's needs" (Brassard, Hart & Hardy, 1991; Erickson & Egeland, 2002). The present study sought to represent the conceptual traditions of psychological maltreatment constructs. The questions included items related to public humiliation, degrading, shaming or threatening to physically hurt, or abandoning the child (Christoffersen & DePanfilis).

Table 1.

Interview questions about child maltreatment.

Physical abuse[1] c.f. (Dubowitz, 2000b).	A single-item dichotomous variable equal to 1 if at least one of the mentioned items had been affirmed in the self-reported personal interview. a. have you parents/stepparents spanked you with various objects e.g. a hanger or cane? b. have your parents/stepparents threatened you with weapons e.g. knife or hand gun? c. have they thrown object at you? d. have they made to strangle you? e. have they given you bit marks or burns? f. have they given you bruises after a punch, e.g. bruises, a black eye? g. has a practitioner noted broken bone, cut, burn, and bleeding around the brain caused by parents/stepparents? h. have you been beaten, kicked or exposed of violence that have resulted in bruises, hemorrhages or other physical damages caused by parents/stepparents?
Sexual abuse[2] c.f. (Berliner & Elliott, 2002)	A single-item dichotomous variable equal to 1 if at least one of the mentioned items had been affirmed in the self-reported personal interview. a. have you experienced sexual abuse by a family member? b. have you been forced to sexual activity by parents or stepparents e.g. finger, flash, attempted intercourse, penetration, other sexual abuse?
Physical neglect[3] c.f. (Dubowitz, 2000a).	A single-item dichotomous variable equal to 1 if at least one of the mentioned items had been in the self-reported personal interview. "Parents can have various opinions about when a child can take responsibility for obligations and conditions. Let us say when you were younger than 12 years old... a. did your parents/stepparents expect that you were responsible for boil-up? b. when younger than 12 did you go to school in dirty clothes because there were no clean clothing? c.* was it up to you self to see a dentist regularly? d. when younger than 12 years did you between times experience repeatedly hunger because there was no one to prepare a meal or no food in the refrigerator? e.* when you were younger than 12 years did you have to take care of younger siblings when your parents were out of home? f. when younger than 12 years old did you have to watch yourself when ill? g. did you have to call a doctor yourself when you were sick? h.[+] often had to care for yourself due to parental alcohol or drug problems? i,[+] Were often abandoned in the home for several days?"
Psychological[4] maltreatment c.f. (Brassard & Hart, 2000).	A single-item dichotomous variable equal to 1 if at least one of the mentioned items had been affirmed in the self-reported personal interview. a. Verbal degrading attacks or humiliating speaks to you by caregiver e.g. called you names, stupid, lazy and useless? b. caregiver had degraded and humiliated you in public. c. Has a caregiver (e.g. parents/stepparents) threatened you to be kicked out of home? d. have you parents/stepparents threatened to physically hurt you e.g. beaten or be whipped? e. have your patents/stepparents by their action told you that you were unwanted, unloved and worthless? f. have they consistently bullied you and criticizing your behavior?

Note: Another version of the equivalent questions was posed to social workers in child protections cases (Christoffersen & DePanfilis, 2009).

[1] Severe physical abuse is a single-item dichotomous variable equal to 1 if at least one of the mentioned items had been affirmed in the self-reported personal interview.

[2] Severe sexual assault is a single-item dichotomous variable equal to 1 if at least one of the mentioned items had been affirmed in the self-reported personal interview.

[3] Severe physical neglect is a single-item dichotomous variable equal to 1 if at least two of the mentioned items had been affirmed in the self-reported personal interview. The questions marked * were not included while the questions marked [+] were added to the mentioned questions for forming the scale of severe physical neglect.

[4] Severe psychological maltreatment is a single-item dichotomous variable equal to 1 if at least three of the mentioned items had been affirmed in the self-reported personal interview.

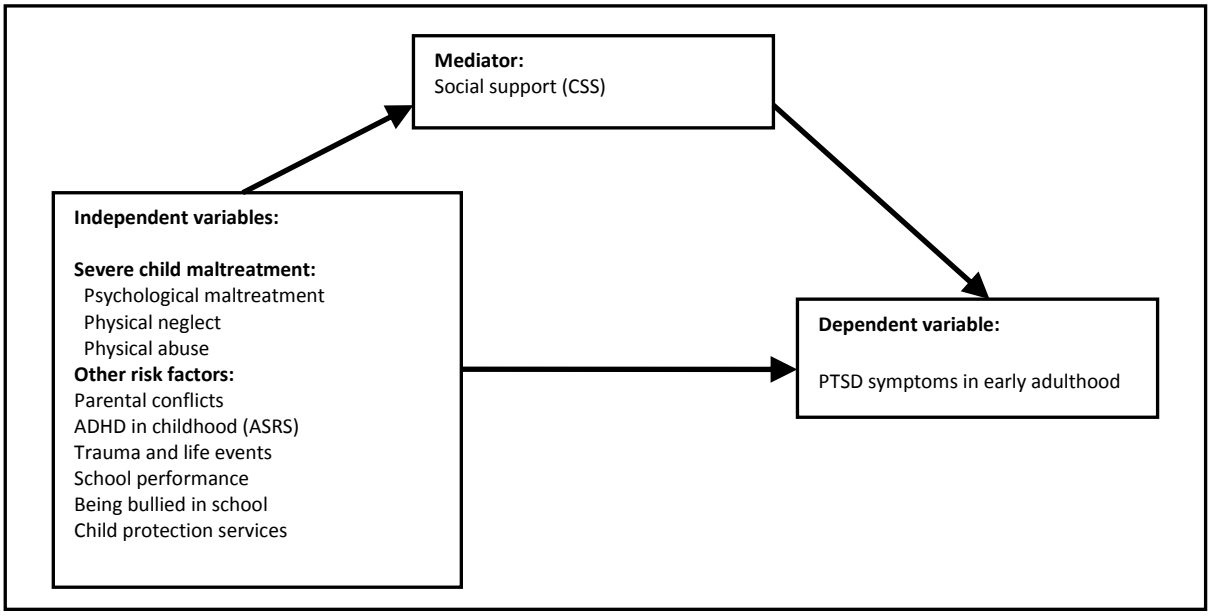
Analyses

In the present study we want to test if social support is a mediator which represents the generative mechanism through which the child maltreatment is able to influence the PTSD reactions. A mediator is a risk factor that explains how and why another risk factor affects the outcome (Kraemer, Lowe & Kupfer,

2005). The knowledge can help us to understand the mechanism through which loss of social support operates in the stress-PTSD reaction outcome (Yarcheski & Mahon, 1999). In other words, we want to isolate the 'social support factor' from the other risk factors and mediators, because we want to discover how child maltreatment is able to influence the risk of long-term consequences such as PTSD symptoms.

Reuben M. Baron and David A. Kenny (1986) have provided a specific analytic procedure appropriate for testing if a risk factor is a mediator between the independent variable and the dependent variable. The method uses three regression equations to test for the statistical significance of a mediator effect (Figure 1). The first regression equation regress the mediator on the independent variable (child maltreatment), while the second equation regress the dependent variable (PTSD symptoms) on the independent variable. The third equation regress the dependent variable on the independent variable and the mediator (low social support). The following conditions must hold to establish mediation according to Baron & Kenny: the independent variable must affect the mediator and the dependent variable. The mediator must be shown to affect the dependent variable, and the effect of the independent variable on the dependent variable must be less in the third equation that is to say that the statistical relationship of the independent variable to the outcome variable is less significant than it was in the second regression equation (Baron & Kenny, 1986).

Figure 1. The analyse model.



Note: Each arrow represents a (logistic) regression model see table 4 and 5. Figure 1 is using the notation from Baron & Kenny, Lockwood & MacKinnon and Kraemer with colleagues (Baron & Kenny, 1986; Kraemer, Lowe & Kupfer, 2005; MacKinnon, Warsi & Dwyer, 1995; Yarcheski & Mahon, 1999).

Results

1. Invisible child maltreatment

Most child maltreatment is invisible to hospital wards or child protection authorities. The incidence of physical abuse during childhood was 56 per thousand when young people were interviewed about their childhood. When the local authorities were asked the same questions about physical abuse in children in a non-bias sample of children, they knew of only 10.7 per thousand children. And the hospital only knew of 1.2 per thousand children during their childhood (see Table 2).

The same questions about child psychological maltreatment were posed both to child protections authorities and to young people themselves, but the result were quite different when the incidence rates were estimated. Nearly one out four had experienced caregiver's psychological maltreatment, but only 32 per thousand were known to the child protections authorities in the local municipalities.

The childhood incidence of caregiver's sexual assault is 12 per thousand when the victims are interviewed at age 25. When childhood incidence of sexual assault is based on the files of child protection authorities 4.5 per thousand were registered. And only 0.3 per thousand were registered to in the hospitals files during their childhood.

Table 2
Estimated number of children exposed to various forms of child abuse and neglect during childhood per thousand children.

Child maltreatment	Hospital files registers Source I	The municipalities Source II	Interview with 25-year old. Source III
Physical abuse	1.2	10.7	56
Psychological maltreatment	0.1	32.0	227
Sexual assault	0.3	4.5	12
Physical neglect	0.2	33.8	149

Note: the estimates of incidences known to local child protection authorities were based on a nationwide sample of cases combined with information from registers following all children in birth cohorts that show that 8.9 percent of a birth cohort will be registered in child protection register at least once during childhood. The estimates of hospitals incidences were based on a life table model for all children born in 1994-2006 (N=914,800). The life-tables were calculated on the basis of age specific probabilities for first time incidences each calendar year.
Source: (Christoffersen, 2010).

The analysis of the sample of children in child protection registers also disclosed that less than half of the maltreatment known to the local authorities was reduced according to their files (Table 3).

Table 3.
Child maltreatment in child protection cases. Percentage that demonstrated improvement 1998-2001.

	Percentage	N
Physical abuse	42	106
Psychological maltreatment	41	320
Physical neglect	47	339

Note: The basis of the percentage is files where it has been a demonstrated or suspected child maltreatment with 'physical abuse', 'psychological maltreatment' or 'physical neglect', respectively.
Source: (Christoffersen, 2002).

2. Interviewing young adults, and victims adults at the same age

Children exposed to child maltreatment such as abuse and neglect have an increased risk of PTSD symptoms when interviewed as young adults. Children exposed to physical abuse have 40 percent risk of having PTSD symptoms as adult this gives them 5 times higher risk of PTSD symptoms than children at the same age who had not been exposed to physical abuse according to personal interviews (unadjusted odds ratio 5). Young persons who have been exposed to sexual assaults from a caregiver in childhood have 10 times increased risk of PTSD symptoms (unadjusted odds ratio 10). Likewise, children exposed to psychological maltreatment or

physical neglect seems to have an elevated risk for PTSD symptoms in adult life compared to children of the same age, who have not experienced this during childhood.

Children exposed to one risk factor may have an increased risk of being exposed to another risk factor or being supported by a protective risk factor (mediator). In order to isolate the statistical influence of the risk factors and the mediators, Model 1-3 (see Table 4-5) contains the adjusted odds ratio. The same picture is coming up, but there also differences to be mentioned. Child abuse is associated with an increased risk of PTSD symptoms in adult life, even when other risk factors or potentially protective factors are accounted for, although the observed odds ratios are modified significantly.

Girls are more vulnerable to PTSD symptoms than boys, even when other risk factors and protective factors were included into the analysis. And as could be expected from other studies, adults with ADHD symptoms must have had the symptoms in childhood and presumable in a more severe status. The results in the present study shows that adults with ADHD symptoms have an increased risk of PTSD symptoms as well (adjusted odds ratio 1.9).

Then the potential mediator variable social support (Crises support scale, CSS) is included into the model. The mediator turn out to be significant associated with PTSD symptoms, also when all the other risk factors were taken into account. Social support can explain why some of the adolescents do not have PTSD symptoms although they have experienced poor parenting (odds ratio 2.0, Model 3,Table 5). Being bullied in school can in itself explain PTSD symptoms in 25-years young adults whatever other disadvantages or social support they have experienced during adolescence (adjusted odds ratio: 1.8, model 2, Table 5).

Who gives social support?

The interviewed persons were asked who gave the support, and the possibility of mention numerous persons were allowed for example father, mother, grandparents, siblings, expanded family, friends, parents of peers, school teacher, kinder garden teacher, others.

Who gets social support ?

The children, who mostly need social support from a significant other, are most often not receiving social support (Table 4). First, social support was regressed on child maltreatment (the independent variables). These results showed that the children being exposed to child maltreatment (physical abuse OR=2.3; sexual assault OR=3.3; psychological maltreatment OR= 5.6; physical neglect OR=14.0) or children having ADHD symptoms receive less social support (odds ratio 2.2). Children of conflicting parents are seen to be associated with less social support (odds ratio 4.1), also when adjusted for other risk and protective factors. Children being bullied or in child protections services are especially vulnerable and receive less social support than others.

Table 4.
First regression equation: Severe child maltreatment, other risk factors vs. social support as outcome.

	Model 1 Low social support[1] Adjusted stepwise	
	Odds ratio	P
Severe child maltreatment:		
a. Physical abuse	2.3	***
b. Sexual abuse	3.3	**
c. Psychological maltreatment	5.6	***
d. Physical neglect	14.0	***
Risk factors:		
f. parental conflict during childhood	4.1	***
g. Gender: women	Ns	
h. Trauma and life events (more than 5)	Ns	
i. child protection services	2.1	***
j. often bullied in school often	2.6	***
k. shifted schools 3 or more times	Ns	
l. ADHD symptoms (Adult Self Report Scale, ASRS)	2.2	***

Note: Ns, Not significant; N/a, Not applicable; * p<0.05; ** p<0.01; *** p<0.001;
Among the 2.890 interviewed persons in the stratified sample 929 had low social support.
[1]Low social support is measured by the Crises support scale, CSS.

Second (model 2), PTSD symptoms (the dependent variable) were regressed on child maltreatment (the independent variables) (Table 5). Results showed that child maltreatment is positive correlated with PTSD symptoms (adjusted odds ratio is 1.5-4.7). Results showed following adjusted associations: Physical abuse (odds ratio: 2.1), sexual assault (odds ratio: 4.7) psychological maltreatment (odds ratio: 1.5) and physical neglect (odds ratio: 1.6).

Third, PTSD symptoms were then regressed on both social support (the assumed mediator) and child maltreatment (model 3). Social support is correlated with PTSD symptoms (adjusted odds ratio is 2.0 for low social support). When the effect of child maltreatment in the adjusted model on PTSD includes social support, the associations turn out to be none significant or reduced. Psychological maltreatment and physical neglect are both insignificant associated with PTSD symptoms when social support is included in the model. The association between sexual assault and PTSD symptoms is reduced from odds ratio 4.7 to 4.3 (Wald Chi-square is reduced from 26 to 24). Only physical abuse maintains the high association with PTSD-symptoms (odds ratio: 1.9 increased to 2.1, while Wald Chi-square is increased from 19 to 24 when social support is included in model 3. These results indicate that social support is a mediator[4] in the relationship between abuse and neglect (psychological maltreatment, sexual assault and physical neglect) and PTSD symptoms in early adulthood.

Other factors are significantly associated with PTSD symptoms in young adults. In many ways being bullied in school may be compared to negative social support. The results confirm the destroying effect of bullying and a row of other risk factors such as parental conflict during childhood, trauma and life events, ADHD symptoms (Adult Self Report Scale, ASRS). The models 2 and 3 are adjusted for these risk factors.

[4] We are here following the definition of a mediator and test methods demonstrated in Yarcheski & Mahon and Baron & Kenny (Baron & Kenny, 1986; Yarcheski & Mahon, 1999).

The role as a victim being bullied in school is not chosen at random and not everybody has a high risk of being bullied by peers in the school. It is mostly the children who are experiencing physical neglect by their caregivers who also are being bullied in school. Their self-esteem has been damaged seriously in the home and this has accompanied being bullied in school. The children 'in care' (that is receiving child protection services) is in the most exposed situation. They have 2 times higher probability of being bullied than adolescents who are living with their parents. Both physical neglect and being 'in care' means coming from a low prestigious family and it often also results in old fashion (or dirty) clothing, poor housing, poor meals etc. The nature of school bullying seems to be attracted from low status and the stigmatising aura following being 'in care' or being physically neglected. Generally the girls and children suffering from ADHD are in a more exposed position for being bullied than others, also when accounted for other risk factors.

School achievements are low among children being bullied in school. This association is expected but tells little about the causal relationship. Future research must disentangle the risk factors.

Table 5.
The second and third regression equation: Severe child maltreatment vs. PTSD symptoms.

Risk factors and mediator: **The independent variables**	PTSD symptoms Number In sample	Exposed to risk factor in Birth-cohort Estimated[1] %	**Model 2**[2] Adjusted stepwise without social support Odds ratio		Wald Chi-square	**Model 3**[3] Adjusted stepwise social support included Odds ratio		Wald Chi-Square
Severe child maltreatment:								
a. physical abuse	124	5.6	2.1	***	19	2.2	***	24
b. Sexual assault	44	1.2	4.7	***	26	4.3	***	24
c. Psychological maltreatment	122	5.3	1.5	*	6	Ns		
d. Physical neglect	91	3.1	1.6	*	5	Ns		
Mediator:								
e. low social support (Crises support scale, CSS)	293	23.1	N/a		N/a	2.0	***	33
Risk factors:								
f. Parental conflict during childhood	179	12.4	Ns	Ns		Ns		
g. Gender: women	293	47.8	1.8	***	27	1.8	***	30
h. Trauma and life events (more than 5)	232	19.7	2.3	***	54	2.3	***	54
i. child protection services	238	6.3		Ns		Ns		
j. often bullied in school	189	15.1	1.8	***	21	1.6	***	14
k. shifted schools 3 or more times	116	6.0	1.4	*	6	1.4	*	5
l. ADHD symptoms(ASRS)	149	12.1	1.9	***	14	1.8	***	11
l. ADHD symptoms and child protection services	88	1.4	1.7	*	5	1.6	*	4
Total	508							

Note: Ns, Not significant; N/a, Not applicable; * p<0.05; ** p<0.01; *** p<0.001; The sample were stratified in two strata. A test showed no significant differences between estimated odds ratio in the two strata, except for young adults with ADHD symptoms who turned out to have PTSD symptoms more often.

[1] The estimated percentages of risk factors in the 1984 birth cohort are based on the weighted stratified sample (N=2,980).

[2] The second regression equation regress outcome variable (PTSD symptoms) on the independent risk factors adjusted for other risk factors.

[3] The third regression equation regress outcome variable (PTSD symptoms) on the independent risk factors and the mediator adjusted for other risk factors.

Discussion and conclusions

One of the problems with studies based on retrospective interviews is that the respondent could forget stigmatized experiences or may feel embarrassed answering questions about child maltreatment or these questions could cause misunderstandings (Melchert & Parker, 1997). These problems had resulted in underrepresentation of the incidence of child maltreatment especially if the questions open up for interpretation or questions demanding detailed information about time (Fergusson, Horwood & Woodward, 2000; Hardt & Rutter, 2004; Widom & Shepard, 1996). Meanwhile large nationwide prospective studies of child maltreatment are scarce and retrospective studies are often the best applicable. The validity of prospective studies and retrospective studies are still being discussed among researchers of child maltreatment (Kendall-Tackett & Becker-Blease, 2004; Widom, Raphael & DuMont, 2004).

The study shows that child maltreatment is for the greater part hidden from child protection authorities and hospital wards. The child exposed to maltreatment also risk to be isolated from peers and significant others who could give social support. The risk of having PTSD symptoms as young adults increases with the exposure to child maltreatment, when other risk and protective factors were taken into account.

The study confirms that social support for great many of the young adults reduces the risk of PTSD symptoms even when experienced poor parenting with the destructiveness of physical abuse, sexual assault, psychological maltreatment and physical neglect. Bullying in school turns out to be associated with later PTSD also when accounted for poor parenting and other risk factors.

Parental conflict is not associated with an increased risk of PTSD, but indirectly parental conflict is associated with less social support and these children seem more vulnerable if there are exposed to other risk factors.

The social support is operationalized in the Crises support scale (CSS) which includes having others who are willing to listen, who provide support in emotional and practical ways when necessary, and having contact with others in a similar situation. It has been suggested that social support is only activated when people are exposed to negative life events. Lin, Simone and colleagues (1979) propose that life events or stressors trigger the mobilization of social support (Lin m.fl., 1979). Bruhn & Philips (1987) suggest that individuals learn to mobilize social support by others when needed (Bruhn & Philips, 1987). Accordingly, one may expect that it is the young people, most in need who actually gets social support. But the general picture is opposite than should be expected. The young people exposed to poor parenting having experienced abuse and neglect (e.g. physical abuse, sexual assault, psychological maltreatment, or physical neglect) received less social support during their adolescence according to their memory when they were interviewed as 25 years old. Social support is a common phenomenon among all the children but rarer among the disadvantaged children growing up than among the more resourceful children. Children suffering from ADHD are receiving less social support than others; the girls are in the same situation as boys when it comes to being socially supported, also when accounted for other risk factors, and children being bullied in school get less social support than others.

The study indicates that child maltreatment is often hidden and invisible for local authorities and others which makes it far more damaging because the child is isolated without a significant other who can give social support. It turns out that especially children suffering from ADHD is hindered from mobilizing social support networks. The study confirms that social support is a mediator between perceived stress such as childhood maltreatment and PTSD symptoms in early adulthood in accordance with earlier studies (Lin m.fl., 1979; Yarcheski & Mahon, 1999). This knowledge can help to understand the mechanism through which

social support and bullying operate in child maltreatment-PTSD outcome relationship. Social support and the opposite being bullied in school are powerful factors in the wellbeing of children and adolescents growing up. We hope that these findings can contribute to interventions designed to prevent or lessen the long term effect of child maltreatment.

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