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The relation between adverse childhood experiences and later mental health among deaf adults

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The aim of this article is to describe some self-reported adverse childhood experiences and the current self-reported mental health situation among 376 adults who lost their hearing before nine years of age, and to analyse the possible link between the adverse childhood experiences and adult mental health problems. Adult members of the Norwegian Deaf Register were asked to complete a self-administered questionnaire. The analysis are focused on three aspects of negative childhood experiences: corporal punishment by at least one of the parents (reported by 36%), being frequently bullied by peers (reported by 23%) and being seriously sexually abused by known or unknown people (reported by 30%). Thirty-five percent of the respondents reported a mental health problem. Results indicated an association between the reported three negative childhood experiences and later mental health problems. Further analysis showed that having experienced two or three of the mentioned negative experiences in combination increased the probability of reporting mental health problems significantly.

Keywords: adverse childhood experiences; children with disabilities; deaf children; violence; bullying; sexual abuse; childhood risks; adult mental health problems

Introduction

Common negative childhood experiences in the general population

Research has demonstrated a strong association between different negative childhood experiences and later adverse adult health outcomes (Bal et al. 2003; Beitchman et al. 1992; Briere and Elliot 2003; Collishaw et al. 2007; Martin et al. 2004; Peleikis, Mykletun, and Dahl 2004; Swanson et al. 2003; Ystgaard et al. 2004).

In this study we have focused on three specific negative childhood experiences: being the victim of parental corporal punishment, peer bullying and serious sexual abuse from known or unknown people. Corporal punishment in the family during childhood is purported to constitute serious risks to the development of mental health problems (Afifi et al. 2006; Paolucci and Violato 2004; Sareen et al. 2005). Victimization from bullying behaviour during school years is also associated with substantial adverse effect on physical and psychological health (Brunstein Klomek et al. 2007; Fekkes et al. 2006; Gladstone, Parker, and Mahli 2006). Finally, being the victim of serious sexual abuse during childhood is regarded as one of the most influential negative experiences a child may have. A large number of studies have

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documented the substantial negative short- as well as long-term effects of sexual abuse on a person's mental health (Beitchman et al. 1991; Beitchman et al. 1992; Briggs and Joyce 1997; Goldmann and Padayachi 1997; Molnar, Buka, and Kessler 2001; Winfield et al. 1990).

These studies have been single-factored, focusing on the effect of one experience alone and not addressing other confounding socio-pathological effects of several factors (Finkelhor et al. 1986; Sedlak 1997). What remain unclear are the effects of multiple forms of abuse and the compounded effects these may have on later development. A few studies have documented the interdependency between different forms of adverse childhood experiences and mental health problems in adult life (Briere and Elliot 2003; Dong et al. 2003), but none have described in detail which factors are the most influencing nor examined the effects of multiple exposures. Furthermore, these studies have been conducted among the general population. We expect, therefore, that the results described in these studies represent general negative experiences subject to everybody, regardless of their disability status.

People with a severe hearing loss

The higher prevalence of mental health problems among severely hard of hearing and deaf people is well documented (Clausen 2003; Eide and Gundersen 2004; de Graaf and Bijl 2002; Luey, Glass, and Elliot 1995; Tambs 2004; Kvam, Loeb, and Tambs 2007). However, the hypothesized association between different types of adverse childhood experiences and later mental health problems in this particular group of individuals has received little or no attention among researchers. There is no reason to believe that children with a severe hearing loss are less at risk of abuse and neglect than children without disabilities. On the contrary, they are probably more exposed (Kvam 2004; Sullivan and Knutson 2000).

Research question

The aim of the study was to disclose and describe self-reported adverse childhood experiences among adults who were deaf during childhood. The exploratory analysis attempts to establish the existence of a possible link between adverse childhood factors and mental health problems reported later in life. Focussing on childhood experiences in this particular group offers the opportunity to emphasize the importance of taking preventive measures during childhood and to establish best ways of offering adapted therapy at any age.

Materials and methods

Participants

Potential respondents were identified through the Norwegian Deaf Register, which contains the names and addresses of the majority of Norwegians who classify themselves as deaf. Participation in the Deaf Register is voluntary, but all who are regarded as deaf and in need of sign language have been encouraged to enrol. Potential candidates were identified, for instance, in hospitals or in contact with an audiologist, or among students enrolled in schools for the deaf. (The Deaf Register claims that at

the time of the study more than 90% of those who were deaf during childhood participate in the register.)

Due to the wide geographical distribution of deaf individuals in Norway, a self-administered questionnaire with postage-paid return envelope was deemed the best way of collecting data. It was subsequently necessary to limit the sample to *all deaf members of the Norwegian Deaf Register over 18 years who are capable of giving written answers to a questionnaire offered in written language or in sign language.* The questionnaires were sent through the Norwegian Deaf Register, and returned voluntarily and anonymously to the researchers.

Measures

Childhood experiences

For the purposes of this survey some background demographic information was required, such as current age, gender, the age when they became deaf (0–3 years, 4–8 years, 9–18 years and older than 18 years), use of Norwegian language and Norwegian sign language, marital status of parents during childhood, place of residence during school years and familial deafness.

The questions related to adverse childhood experiences were taken from a survey conducted by the Norwegian National Institute of Public Health (Tambs 1994). With respect to corporal punishment, respondents were asked: *Did your father/mother physically punish you during childhood?* Response categories were *Yes* or *No* for each parent.

To elicit the experiences of being bullied, respondents were asked: *Were you, during the school years, bullied?* Response categories were: (a) *Not at all*, (b) *very little*, (c) *one–three times a month* and (d) *every week.*

Experienced sexual abuse was classified in the questionnaire through 10 alternative categories, ranging from episodes without physical contact to sexual intercourse. These were grouped by the researchers into five categories for the analyses presented here: (a) *Never sexually abused*, (b) *non-contact abuse*, (c) *erotic kissing*, (d) *genital fondling* and (e) *intercourse.*

Mental health questions

The World Health Organization (WHO) defines mental health as 'a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (World Health Organization 2001). Serious mental health problems should be individually diagnosed by a psychiatrist or a specialist in psychology. For most quantitative research purposes, however, readily available instruments may be of analytical value, even though they do not fully correspond with the WHO definition. Tambs and Moum (1993) state from a large population sample that the symptoms elucidated through the Hopkins Symptom Checklist – SCL 25 (Winikur et al. 1984) can be a good indicator of an individual's general mental health. They claim that for most research purposes an abbreviated, five-item version to a large extent can substitute the full scale ($r = 0.77$). Also Strand et al. (2003) found that there was a high reliability between the full and the shortened instrument (Cronbach's alpha > 0.88).

Five crucial mental health items (SCL-5) were identified that dealt with feelings during *the last two weeks*. These items were: (1) feeling nervousness or shakiness inside, (2) feeling fearful, (3) feeling hopeless about the future, (4) feeling blue and (5) worrying too much about things. Items were scored on a four-point scale: *not at all, a little, quite a bit, extremely.*

Ethical considerations

Articles about the pending survey were published in the *Norwegian Deaf Magazine* at specific intervals (10 months, three months and one month) prior to the start of the study. In addition, announcements were made in a monthly TV-magazine for sign language users. Certain questions in the survey dealt with rather intimate themes (like sexual abuse), and it was stressed, prior to initiation of the survey and throughout, that participation was voluntary. Individuals who may have required further advice or assistance upon completing the survey were provided with the videophone or telephone numbers of people or institutions who would be able to provide those services. Respondents were also informed that they could disregard questions that they felt were too sensitive, and that every questionnaire would be treated strictly anonymously and with strict confidentiality.

Procedures and response rate

The questionnaire was translated into Norwegian Sign Language (NSL) by a native NSL signer, who was appointed by the Norwegian Association of the Deaf. The translation was informally approved by another NSL user. Along with the written questionnaire there was a message to the recipients that they could send an e-mail, a letter or a telephone call (through adapted central) to the Norwegian Deaf Register to receive a video-taped, sign language version of the questionnaire. All responses were to be filled in on the paper questionnaire. Use of the video version was not registered in the questionnaire, nor was the number of such applications registered.

A total of 431 completed questionnaires were returned, representing a response rate of 46%. The gender distribution was 57% females and 43% males. Apart from a slight under-representation among the oldest group of respondents, the age and gender distribution in the sample was found to be representative of the age and gender distribution to be found in the membership list of the Deaf Register (18–25, 26–35, 46–55, 56–65, 66–75, >75 years).

Data analyses

Statistical analyses were performed using programmes available in the Statistical Package for Social Science (SPSS for Windows release 11.0). The significance of observed associations and/or differences between variables was tested using the chi-square statistic (Pearson's χ^2). A difference was considered to be statistically significant if $p < 0.05$.

Multivariate logistic regression was used to assess the relationship between the dependent variable (mental distress) and the independent variables (three selected

childhood experiences), controlling for the effects of age. The sum-score for mental distress (SCL-5) was dichotomized for the logistic regression analyses: sum-scores of 1.85 or over being indicative of 'severe mental distress' and scores below 1.85 indicative of little or no mental distress (Søgaard et al. 2004).

The odds ratio (OR) with 95% confidence intervals (CI) was used to indicate a significant association; 95% CI that exclude the value 1.0 are considered statistically significant.

Description of childhood experiences and adult mental health

Background variables

Most of the respondents (77%) were born deaf or lost their hearing before the age of four years, 11% became deaf aged four–eight years, 4% aged 9–18 years and 8% were 19 years or older when they became deaf. As this study is focusing on risk factors for deaf children, the descriptions and analyses are restricted to the 376 respondents who became deaf before the age of nine years. Two hundred and one respondents (53%) were currently 18–45 years, and 175 (47%) were 46 years or older.

All were competent sign language users and reported understanding the Norwegian language. None of the respondents had undertaken a Cochlear implantation, and the use of ordinary hearing aids was neither requested nor recorded in the questionnaire. Ninety (24%) had one or more deaf persons within their closest family, and less than 10% of the respondents came from broken or single-parent families. More than half (54%) had been boarding school students. The rest (46%) lived for the most part with their family; however, 14% of this group had stayed at least one year in a boarding school.

Among the reported background variables, age when they became deaf (before four years of age and aged four–eight years), having a deaf family member, growing up in a broken or single-parent family or the living arrangements during school years (home, boarding school or a combination), no significant differences were observed with respect to any of the three measures of negative childhood experiences or the measure of mental health status.

Negative experiences

Corporal punishment was experienced by 36%; 75 individuals (20%) reported maternal and 67 (18%) parental corporal punishment. As to being bullied, 29% of the sample answered *Not at all*, 48% *Very little*, 10% *one–three times a month,* and 13% *Every week.* In this article 29% being bullied includes the last two alternatives (23%). Being frequently bullied is coded as occurring one–three times a month or every week (23%).

Childhood sexual abuse was measured by specified questions designed to elicit different degrees of sexual contact. A respondent may have experienced more than one form of sexual abuse; however, abuse was categorized as the most serious form of unwanted sexual contact encountered during childhood/youth.

In this article sexual abuse is operationalized as abuse that involves either genital fondling or intercourse. A total of 30% of the respondents reported such form of sexual abuse prior to the age of 18 years (all reported being younger than 17 years of age).

Current mental health status

Responses to the five questions from the SCL-5 are presented in table 1.

Table 1. Responses (in percent) to five mental health items (SCL-5): negative feelings during the last two weeks.

SCL-5	Number of respondents	Not at all	A little	Quite a bit	Extremely
1. Nervous	348	54	27	15	4
2. Fearful	344	69	21	8	3
3. Hopeless	348	50	28	17	6
4. Blue	347	44	35	17	4
5. Worried	348	39	37	20	5

Gender differences were assessed for the data presented above; however, with dichotomized response categories (*not at all* and *a little* versus *quite a bit* and *extremely*). While female respondents reported negative feelings more often than males, the only gender difference that was statistically significant related to feeling fearful ($\chi^2 = 5.57$, df $= 1$, p $= 0.018$).

A total of 344 respondents answered at least four of the five items that make up the SCL-5; those with only one missing value had missing recode to the series average for that individual. Based on these results an SCL-5 sum-score was calculated by averaging the five items (summed and divided by 5) yielding a score with a possible range from 1 to 5. For the sample presented here the characteristics of the scale were as follows: minimum $= 1$, maximum $= 4$, mean $= 1.72$, SD $= 0.69$.

A cut-off of 1.85 has been used on SCL scales to differentiate between groups of individuals experiencing mental distress; scores of 1.85 or higher being indicative of mental distress (Strand et al. 2003). In the data presented here, 119 of the 344 respondents (35%) with SCL-5 sum-scores of 1.85 or greater were considered to have mental distress. The remainder (65%) who scored lower than 1.85 were classified as having no mental distress. There was no significant gender difference observed with respect to the SCL-5 sum-scores, however, those who were currently over 45 years of age were significantly less likely to have mental distress (25%) compared to those 45 years of age or younger (42%) ($\chi^2 = 11.07$, df $= 1$, p $= 0.001$).

The connection between childhood experiences and mental health among the subjects

Mental health, as measured by the sum-score of five SCL items was independent of both place of residence during school years, having deaf parents or siblings or belonging to a broken or single-parent family.

Three aspects of the collective childhood experience were studied to assess the relationship between childhood experiences and current mental health (dependent variable). If either or both parent used *corporal punishment,* or if the child was *bullied* on a regular basis these were considered as negative experiences. A negative experience of unwanted sexual contact was based on the severity of the contact. The categories *non-contact abuse* (pornography, flashing and voyeurism) and *erotic kissing* were considered not to be sexual abuse, while acts of *fondling of genitals/private parts* or *intercourse* were categorized as sexual abuse and considered as negative childhood

experiences. Based on this differentiation, 30% of the sample (32% of the girls and 28% of the boys) had experienced a serious form of childhood sexual abuse.

Each of these variables is evaluated in terms of mental health score <=1.84 and 1.85+ in table 2.

Significantly more mental health problems were associated with each of the negative experiences above – and with being younger (<=45).

No single factor or variable acts independently of others in determining an individual's mental health status. In order to determine which variables in combination might have some influence on one's current state of mental health a multivariate logistic regression analysis was performed that included the dichotomized SCL-5 sum-score as the dependent variable and three negative childhood experiences in the questionnaire as dependent variables: corporal punishment, bullying and experience of sexual abuse (see table 3).

The analysis revealed that, controlling for the effects of current age, parents' use of corporal punishment, being the victim of bullying and/or of sexual abuse were statistically significant predictors of one's current mental health status.

Some children were the victims of more than one negative experience. In table 4 risk of adult mental distress was analysed according to the burden of negative experiences carried. Thirty-three percent of the sample (124 individuals) reported only one bad experience, 24% (91 individuals) reported two bad experiences and 7% (25 individuals) experienced all three.

There is an increasing risk of poor mental health with increasing level or degree of childhood experiences. Further analysis showed that 33% of the sample had experienced only one of the adverse childhood situations. Their risk of later mental health problems seemed to be more than doubled compared to those without any such experiences. If the deaf person had experienced two of the negative factors, which was the case for 24% of the sample, the measured risk of adult mental health problems was more than five times higher. If a person was the victim of all three

Table 2. Bi-variate analysis of mental health risk factors with mental health score.

	Mental health score					
	<=1.84		1.85 plus		Total	
	n	%	n	%	N	P value
Corporal punishment						
No	150	71.8	59	28.2	209	
Yes	36	45.0	44	55.0	80	<0.001
Being bullied						
No	188	72.6	71	27.4	259	
Yes	32	41.0	46	59.0	78	<0.001
Sexual abuse						
No	175	74.5	60	25.5	235	
Yes	50	45.9	59	54.1	109	<0.001
Age						
<=45	115	58.1	83	41.9	198	
>45	110	75.3	36	24.7	146	0.001

Table 3. Results of Multiple Logistic Regression Analysis – based on significant childhood experiences (n = 286).

			95% CI for OR	
Dependent variable: SCL-5	OR	P value	lower	upper
Independent variables:				
Age (in years)				
<=45†	1.0			
>45	0.61	ns*	0.34	1.09
Corporal punishment				
No†	1.0			
Yes	2.83	0.001	1.57	5.11
Being bullied				
No†	1.0			
Yes	3.36	<0.001	1.85	6.09
Sexual abuse				
No†	1.0			
Yes	2.20	0.006	1.25	3.87

Notes: *ns – not statistically significant; †Reference group for statistical analyses.

Table 4. Results of Multiple Logistic Regression Analysis – based on number of negative childhood experiences (n = 344).

			95% CI for OR	
Dependent variable: SCL-5	OR	P value	lower	upper
Independent variables:				
Age (in years)				
<=45†	1.0			
>45	0.66	ns*	0.40	1.11
Number of bad experiences				
None†	1.0			
One	2.17	0.02	1.15	4.11
Two	5.48	<0.001	2.83	10.58
Three	16.75	<0.001	5.50	51.14

Notes: *ns – not statistically significant; †Reference group for statistical analyses.

factors, as was the situation for 7% of the sample, the measured risk of later mental health problems was nearly 17 times higher compared to those without any such experiences.

Discussion

This study is the first in Scandinavia to collect data from a national sample of deaf adults, thus providing a population-based perspective concerning childhood experiences and adult mental health among deaf people, and therefore the first study to compare the possible influence of adverse childhood experiences with adult mental

health status in this specific group. The study showed that each of the three risk factors measured (having a mother or father using corporal punishment, being bullied, and being the victim of serious childhood sexual abuse) were each significantly correlating with reported later mental health problems, which is also in accordance with many single-factored studies in the general population (Fekkes et al. 2006; Gladstone, Parker, and Mahli 2006; Collishaw et al. 2007).

Some methodological issues in this research should be addressed. The first is the fact that all respondents were deaf. To our knowledge, no studies similar to the present study have been carried out among the general population. We lack, therefore, comparable results from a hearing population. For some children deafness may itself be an adverse childhood experience that impacts on healthy mental development later in life. The question remains whether the negative experiences described here would impact differently depending on the status of one's disability, or whether the findings presented – or at least the direction of these findings – are common to all human beings regardless of hearing disability or any other disability? This study is reporting from a Norwegian deaf sample, and leaves the question of deafness as a specific factor open for others to resolve in a similar study.

Furthermore, the study focused on three specific types of negative childhood experiences. Other experiences may also have contributed positively or negatively to later mental health, such as appearance (body image), friendship during childhood, degree of success or failure in sports or academics, the family's socio-economic status, health conditions, parental relationships (both positive and negative), relationships with teachers and other important adult persons, and injury experiences. These factors are not discussed here but their impact should not be underestimated. Adult mental health is further influenced by positive or negative experiences that occur later in life and after childhood. While these experiences are also not included in the study, their importance in determining overall mental health should not be neglected. Further research is needed to better understand the entirety of childhood experiences of adult mental health as well as the added impact of later, adult experiences on the same. This research is needed regardless of the individual's hearing or disability status.

It should be noted that the response rate was low, however not lower than that often seen and reported in other studies on this theme among people with disabilities (Nosek et al. 2001). There may be a risk that the most able members of the Deaf Register chose to respond; however, the questionnaire was relatively simple and, for the most part, required only that the respondent indicate with a cross the chosen alternative. All the respondents had completed seven years or more at school. Furthermore, instructions were provided on videotape in sign language. We found no sign of misunderstandings in the completed questionnaire (for instance when asked about different types of sexual abuse).

All retrospective studies include a risk that details recalled from the past may be forgotten or distorted. One cannot disregard that a person with a mental health problem will have a selective and perhaps a distorted memory of early childhood and may thus overstate negative experiences. Similarly, they may equally as likely have blocked some negative experiences from their memory, perhaps as a mechanism of defence or self-preservation. Results from retrospective studies cannot be used as proof of a cause and effect relationship, but can point to possible causes worthy of further research. There is no reason to believe, however, that a deaf sample will differ from a sample in the general population in this relation.

Dichotomizing response categories and the choice of appropriate cut-offs also represent points for discussion. That may be particularly true with respect to sexual abuse and the choice of differentiating between 'non-serious' and 'serious' forms of sexual contact. Among children, any form of unwanted, unsolicited, inappropriate contact may be harmful even if it does not go so far as the fondling of private parts and/or intercourse. However, analyses were performed examining each category of sexual contact separately and other combinations of categories and the data support the selected dichotomization.

Also the selected measures of mental health may raise some uncertainties. The abbreviated five items version of the SCL-5 is evaluated to be a good indicator of an individual's mental health for use in a survey (Strand et al. 2003). However, while the SCL-5 has been demonstrated as relevant in addressing mental health problems, it is not fully in agreement with newer definitions of mental health, which also include positive aspects of functioning and well-being (World Health Organization 2001).

Slightly more than half of the sample (55%) was between 18 and 44 years of age. Among this group we found significantly more mental health problems than among the older cohort. This was unexpected, since the younger respondents more often attended their local school, more often had teachers or interpreters using sign language, had more education, and experienced more acceptance of sign language in society. Furthermore they could benefit from the growing awareness of empowerment that has been observed in recent years in both deaf organizations and in schools. While these factors may facilitate a generally healthier mental environment, the younger cohort has also been exposed to a society that is more open and tolerant of disability on the one hand and mental health problems on the other. The result of reduced stigma towards problems associated with mental health may be an increased willingness on the part of respondents to self-report such problems.

The three reported childhood experiences seem to be valid contributory factors in the development of a deaf individual's later mental health. The use of corporal punishment was found to be of great importance, which is in accordance with Paolucci and Violato (2004) and Sareen et al. (2005). Being bullied imparted a considerable risk to later mental health problems, as found by Brunstein Klomek et al. (2007), Fekkes et al. (2006) and Gladstone, Parker and Mahli (2006). Finally, as has been well documented by several researchers, sexual abuse was an important risk factor with respect to adult mental health problems (Beitchman et al. 1992; Goldmann and Padayachi 1997; Molnar, Buka, and Kessler 2001).

Mental health problems were reported twice as often among those who had been the victim of one negative experience, five times as often among the victims of two negative experiences and nearly 17 times as often among those who had been the victims of all three negative experiences.

Conclusions

This article has described three adverse childhood factors as reported by a group of adult deaf people, among which 35% reported mental health problem. The study cannot immediately be transferred to other groups with or without disabilities. Deaf adults may meet difficulties that are influencing their mental health in a different way than other groups, for instance during adult education and employment. However, the needs of respect, communication, inclusion, friendship and freedom of abuse, are

common for all children, and the fulfilment of these needs will influence all children, whether disabled or not.

A relatively large minority of the respondents had been the victims of different types of adverse childhood experiences. Considerable risk factors for later mental health problems were found to be parents' use of corporal punishment, being the victim of frequent bullying, and experiences of serious sexual abuse. These indicators should awaken parents, teachers and social workers to these potential risks and immediate steps should be taken to instigate special measures to help the child. More studies about the personality of children at risk of adverse childhood experiences are needed.

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