

ORIGINAL RESEARCH—PSYCHOLOGY

Sexual Behavior and Concerns in a Sample of Elderly, Former Indentured Swiss Child Laborers

Karin Rechsteiner, MSc, Andrea Burri, PhD, and Andreas Maercker, PhD, MD

University of Zurich—Department of Psychology, Zurich, Switzerland

DOI: 10.1002/sm2.84

ABSTRACT

Introduction. Past research suggests a link between post-traumatic stress disorder (PTSD) and an increased risk for sexual problems. However, there is still no clear picture whether these higher rates are related to trauma exposure or to PTSD itself.

Aim. The aim of the present study was to complement existing knowledge on the relative impact of trauma and PTSD on sexuality in later life, considering different aspects of trauma exposure on both men and women.

Methods. The study was conducted on a unique population sample of former Swiss indentured child laborers (55 men, M_{age} 78, age range 60–95 years) who have repeatedly experienced a variety of severe childhood traumas.

Main Outcome Measures. Sexual outcomes were measured using two scales from the Trauma Symptom Inventory—Dysfunctional Sexual Behavior (DSB) and Sexual Concerns (SC). PTSD symptoms and trauma were assessed with the Short Screening Scale for PTSD and the Composite International Diagnostic Interview, respectively.

Results. Twenty-two individuals showed PTSD symptoms, and 53 reported having experienced childhood trauma. Significant differences between men and women were reported for DSB and SC. Men reported a significantly higher prevalence of both SC and DSB compared with women.

Conclusions. This is the very first study investigating DSB and SC in a sample of older adults exposed to similar traumatic experiences and settings. However, some study limitations need to be considered such as the small sample size. Additional studies are needed to further explore the relative role of traumatization and PTSD on sexual behavior and well-being, especially to improve sexual therapy for patients who experience trauma. **Rechsteiner K, Burri A, and Maercker A. Sexual behavior and concerns in a sample of elderly, former indentured Swiss child laborers. Sex Med 2015;3:311–320.**

Key Words. Sexual Behavior; Sexual Concerns; Post-Traumatic Stress Disorder; Trauma; Old Age

Introduction

Post-traumatic stress disorder (PTSD) is a psychiatric disorder describing the long-lasting symptoms that can occur after exposure to extremely stressful life events. It has been well documented that PTSD significantly affects emotional, social–interpersonal, as well as physical

health, and hence impacts on health-related quality of life [1,2]. Recent studies have suggested that the presence of PTSD is also associated with increased rates of sexual problems in both men and women [3–5].

The majority of studies investigating the relationship between traumatization, PTSD, and sexual problems focus on male combat veterans

and female rape victims. Results from these studies have consistently suggested that combat veterans with PTSD experience a higher rate of sexual dysfunction than those without PTSD and that rates of sexual problems of veterans exceed rates of similar problems found in community samples. Such sexual difficulties mainly include premature ejaculation and failure to achieve or maintain erection, although sexual disinterest and orgasm difficulties have also been reported [3,6,7]. Research on women with PTSD remains comparably scarce, but findings also highlight the serious effects of PTSD morbidity on women's sexual satisfaction and function. Exploration of the impact of trauma alone (without PTSD) on women has mainly focused on sexual assault and found that assault survivors have an increased likelihood of risky sexual behavior and problems such as anorgasmia, sexual anhedonia, and multiple sex partners [8,9].

Research has further demonstrated significant associations between previous experience of trauma and sexual problems independent of PTSD diagnosis and symptoms [10,11]. While some study findings suggest that the specific form of abuse is irrelevant to the development of sexual problems, other studies highlight that especially sexual trauma—and childhood sexual abuse in particular—seems to be linked to the impairment of sexual functioning in later life [11,12]. In addition, research findings have also highlighted the association between accumulated exposure of different types of traumatic events (i.e., cumulative trauma) and disease-specific symptom severity in a number of areas, such as anxiety, depression, anger, and somatic complaints [13–16]. It is very likely that such cumulative effects resulting from repetitive trauma exposure can also be observed on sexual parameters and health.

Although previous studies have demonstrated the serious effects of PTSD and trauma on men and women's sexual behavior, research in this particular area—most of all in both women and men and in older adults—remains scarce. In particular, the role of trauma-type specificity (e.g., emotional neglect vs. physical abuse vs. sexual abuse), as well as the potential cumulative effects of multiple traumas on sexuality, and the relative role of trauma exposure vs. PTSD have been fairly ignored so far. Moreover, epidemiologic studies investigating sexuality in older adults are next to nonexistent, and only little research has explored the effects of traumatization and PTSD on individuals' sexual behaviour in non-combat veteran men or in men and women with similar trauma experiences.

Aims

The aim of the present study was to complement knowledge on the effects of previous abusive experience on sexual behavior and function in later life, using a population sample of former female and male Swiss indentured child laborers who have repeatedly experienced a variety of severe childhood traumas (CTs). More specifically, the aims were: first, to present descriptive data regarding the presence of sexual problems and concerns; second, to explore descriptive differences between men and women in terms of trauma exposure, PTSD, and demographic and sexual characteristics as well as to examine the associations between these variables; third, to investigate whether the specific type and category (i.e., interpersonal vs. accidental; see Methods section), as well as the number of trauma (i.e., cumulative trauma), are associated with the variance in sexual symptoms (i.e., does sexual abuse impact more on sexual behavior compared with, e.g., physical abuse); and fourth, to explore differences in sexual outcomes and continuous, as well as categorical, measures of PTSD symptoms. In this sense, we postulated the following hypotheses: First, older men would report higher rates of sexual concerns and dysfunctional sexual behavior compared with older women. Second, traumatized individuals with PTSD symptoms report higher rates of sexual concerns and dysfunctional sexual behavior compared with traumatized individuals without PTSD symptoms. Third, individuals with CT exposure report higher rates of sexual concerns and dysfunctional sexual behavior compared with individuals with trauma exposure occurring in adulthood.

Methods

This study constitutes a substudy within a bigger project [17]. The main study started as an explorative longitudinal study consisting of two measurement points (at an 18-month interval) assessing traumatization, PTSD symptoms, and long-term effects on a variety of aspects (e.g., cognitive function, bonding, and development and prevalence of mental disorders). Data assessment for the first measurement point (T1) started in May 2010 and was completed in April 2012. Collection of psychometric data for the second measurement point (T2) started in summer 2012 and is still ongoing. Data used in this study were taken from T1 only.

Participants

The study sample was drawn from an initial sample of 141 former Swiss indentured child laborers (i.e., “Verdingkinder”). During the 1950s, these children were separated from their parents (usually poor or single mothers) by the Swiss authorities and sent to work on farms. Historic studies have shown that many of these children suffered extreme forms of abusive experiences as they were regularly beaten, emotionally and even sexually abused [17,18].

Inclusion and Exclusion Criteria

To be included in the study, the following criteria had to be met: (Swiss)-German speaking; a minimum age of 60 years; at least one experienced period of child slavery; reported at least one traumatic experience (see Methods section). Participants were recruited via advertisements in local and national newspapers and magazines, and via specific “Verdingkind”-associations. All participants provided informed consent and stated their willingness to participate in this study.

Procedure

After providing written informed consent, participants participated in a 2- to 4-hour interview and were asked to fill in a battery of questionnaires assessing information related to PTSD, trauma, cognitive ability, and mental and physical health. The interview was conducted by instructed research assistants and/or doctoral students, either at the Psychology Institute of the University of Zurich or alternatively at the participants' homes. Participants were not given any compensation for participation.

Ethical Review

The study was conducted following the ethical standards of the German and Swiss psychological associations. Formal approval of the project was obtained by the Ethics Committee of the Canton of Zurich.

Main Outcome Measures

Socio-Demographic Information

Information regarding socio-demographic status of the participants was assessed with self-constructed questions.

Sexual Behavior and Concerns

Two scales from the Trauma Symptom Inventory (TSI) were used to assess the participants' sexual

functioning and concerns [19,20]. The TSI is a 100-item measure of psychological sequelae of traumatic events. Each item describes a symptom, which is rated for frequency of occurrence in the past 6 months (0 = *never*, 3 = *very often*). The TSI includes three validity scales (Response Level, Atypical Response, and Inconsistent Response), which assess the tendency of respondents to endorse items with low base rates of endorsement or to respond inconsistently. In addition to the three validity scales, the TSI contains 10 clinical scales, including measures of dysfunctional sexual behavior and sexual concerns. The Dysfunctional Sexual Behavior (DSB) scale consists of nine items (e.g., “Having sex to keep from feeling lonely or sad”) and assesses sexual behaviors that are self-defeating or maladaptive because of an indiscriminate quality, potential for self-harm, or use for nonsexual purposes. The Sexual Concerns (SC) scale also consists of nine items (e.g., “Bad thoughts or feelings during sex”) and assesses self-reported sexual distress, including sexual dissatisfaction, sexual functioning problems, and unwanted sexual thoughts or feelings [19,21]. Neither scale includes any items explicitly assessing number of sex partners or frequency of sexual behavior.

The TSI has been widely validated and translated into a number of languages. The psychometric properties have shown to be very good, with internal consistency for the clinical scales showing alphas ranging from 0.74 to 0.91 [19]. The author further reports evidence of discriminant validity, with patients with a trauma history scoring significantly higher than nontraumatized patients. Internal consistency as assessed using Cronbach's alpha was $\alpha = 0.83$ for SC and $\alpha = 0.84$ for DSB in this study, which corresponds to the mean alphas of 0.86, 0.87, 0.84, and 0.84 found in general population, clinical, university, and military samples, respectively [19].

Trauma Exposure (Childhood Adversity and Traumatic Life Experiences)

Potentially traumatic experiences were assessed with the Short Version of the Childhood Trauma Questionnaire [22,23] and the trauma list of the Composite International Diagnostic Interview (CIDI) [24]. The CTQ is a self-report inventory that provides brief, reliable, and valid screening for histories of abuse and neglect. In addition, the CIDI's list of traumatic events (11 events including direct combat experience in a war; life-threatening accident; natural disaster; witnessed someone

being badly injured or killed; rape; sexual molestation; serious physical attack or assault; threatened with a weapon, held captive, or kidnapped; torture or terrorism; any other extremely stressful or upsetting event; great shock because one of the events on the list happened to someone close) served as a guide to determine the most severe traumatizing life experience participants had gone through [25].

According to the information provided, the traumatic events were categorized into CT (having occurred before the age of 18 years) and adulthood trauma (AT) and were further classified according to the type of trauma (including sexual abuse, emotional abuse/neglect, physical abuse, self-experienced death threat, severe accident/illness, witnessing a severe accident, losing a close member of the family or reference person, and other/not specified—e.g., imprisonment).

Traumatic events can additionally be subsumed into different types of trauma [26]. Maercker proposed an orienting scheme that subsumes traumatic experience into two main categories: interpersonal vs. accidental traumas. While interpersonal traumas relate to sexual and physical assault, combat, violent assault and torture, accidental traumas include disasters and severe automobile accidents, for example.

PTSD

For the assessment of PTSD symptomatology, the Short Screening Scale (SSS) [27,28] was used. The seven-item SSS for PTSD is an empirically derived instrument used to discriminate between individuals with PTSD symptoms and healthy ones [27]. Five of the seven symptoms relate to the avoidance and numbing symptom clusters and two to the hyperarousal symptom cluster. Participants' answers were rated on a four-point scale (0 = "never/only once" to 3 = "five times a week/almost always"), and a total mean score was calculated representing PTSD symptom severity. The authors of the SSS suggest a cutoff score of 4, which best balances the scale's ability to detect patients with or without PTSD. The specific performance characteristics of the SSS (including the German version) have recently been investigated in two studies and are considered very good [28,29]. Cronbach's alpha of the scale in our study was acceptable with $\alpha = 0.72$. The psychological impact of trauma was further measured using the following TSI scales: Anxious Arousal (AA), Anger/Irritability (AI), Intrusive Experiences (IE),

Dissociation (DIS), and Impaired Self-Reference (ISR) [19].

Depression

Symptoms of depression were assessed using the short 15-item version of the Geriatric Depression Scale (GDS), a self-report instrument specifically designed to identify depression in older people [30]. The questions are answered by "yes" or "no," and this simplicity enables the scale to be used with ill or moderately cognitively impaired individuals [31]. Scores greater than 4 indicate the presence of depression, which can be classified as mild, moderate, or severe. Validation of the German version of the GDS found the instrument to be a reliable and valid screening instrument with an average item discrimination of 0.5, low inter-item correlation ($r = 0.2$), and a very high internal consistency ($\alpha = 0.9$) [32]. In the current study, GDS showed adequate internal consistency and reliability ($\alpha = 0.8$).

Statistical Analyses

Statistical analyses were conducted using STATA (Version 10.0, 2008, StataCorp, College Station, TX, USA). From the total of 141 participants with available T1 data, analyses were conducted on a total of 96 individuals with complete data. Comparative analyses revealed that the subsample did not differ in any of the socio-demographic or variables relating to trauma, PTSD, or sexual behavior and concerns compared with the full sample.

For descriptive statistics, two-sample tests of proportions to assess differences between gender on categorical and binary data were used. Because normality of the data could not be assumed given the skewness of the distribution of the dependent variables (i.e., DSB and SC), Mann-Whitney tests were used to assess differences between men and women on the continuous variables. Correlations between the various dependent and independent variables were calculated using Pearson's correlation (for continuous variables) and point-biserial correlation (for continuous and binary variables). All tests were two-tailed. For all analyses, a *P* value less than 0.05 was considered statistically significant, unless stated otherwise. Bonferroni correction was used to account for multiple testing.

According to the information regarding the time that the trauma was experienced (CT vs. AT) and the PTSD status (positive vs. negative), participants were assigned to four different groups: CT/PTSD+ ($n = 10$), CT/PTSD- ($n = 31$),

AT/PTSD+ ($n = 12$), and AT/PTSD- ($n = 43$). Categorization to interpersonal vs. accidental trauma was done according to the nature of the reported main traumatic event. By adding up the number of reported trauma, a cumulative trauma score was created. Because normality of the data could not be assumed given the low sample size in some of the groups, univariate Kruskal–Wallis analyses (nonparametric test, equivalent to ANOVA) were calculated to compare the score differences between the four main groups for the continuous sexuality-related variables. To control for the influence of depression and age as potential covariates on the sexual outcome variables, Kruskal–Wallis tests were performed on covariate-adjusted residuals (i.e., GDS and age). Covariate-adjusted residuals were obtained from the overall regression line fit to the entire data set.

Results

Table 1 shows the sample characteristics of the overall sample ($N = 96$) and by gender ($n = 55$ men, 57.3%). The age of the participants ranged from 59 to 95 years ($M = 77.57$, $SD = 6.29$). Most of them were married (41.7%), while most of the women were widowed (39.0%). According to the SSS (cutoff score of 4), 22 individuals (22.9%) screened positively for PTSD symptoms, and no significant gender differences were detected in terms of screening positively or negatively for PTSD. Significant differences between men and

women were reported for both TSI scales assessing sexual behavior and concerns ($U = 398.00$, $z = -3.60$, $P < 0.001$ and $U = 365.00$, $z = -3.26$, $P = <0.001$, respectively). In average, men scored higher than women in all single items of both the SC and the DSB scales. Both genders presented the highest mean scores for the SC item “not being satisfied with your sex life.” Regarding the DSB scale, while men presented the highest mean score for the item “flirting” or “coming on” to someone “to get attention,” women showed the highest mean for the item “getting into trouble because of sex.”

While physical violence, sexual abuse, and emotional abuse/neglect were the most prevalent forms of experienced abuse in childhood (32.1%, 20.8%, and 20.8%, respectively), the most frequently reported traumas in adulthood were “other” (25.6%), witnessing death/accident (20.9%), and death of a family member (16.3%). Physical or sexual violence was reported by 6.9% of the participants, and none listed emotional abuse/neglect as the most severe traumatic event. There were no gender differences as to whether the traumas were experienced during adulthood or during childhood. However, men and women differed significantly in the prevalence of sexual abuse ($\chi^2[1] = 5.11$, $P = 0.024$) and physical abuse ($\chi^2[1] = 0.97$, $P = 0.032$), with men more frequently reporting previous physical abuse (25.9% vs. 15.0%) and women more frequently reporting sexual abuse (5.6% vs. 27.5%).

Table 1 Sample characteristics of the overall sample and by gender

Variables	Overall (N = 96)			Men (n = 55)			Women (n = 41)			P
	M	SD	Range	M	SD	Range	M	SD	Range	
Age	77.57	6.29	60–95	77.65	5.32	69–90	77.46	7.46	60–95	0.89
CUM	2.20	0.78	1–3	2.18	0.82	1–3	2.22	0.73	1–3	0.91
GDS	3.81	3.54	0–13	3.46	3.42	0–13	4.28	3.69	0–13	0.22
SC	3.32	4.82	0–23	4.33	3.48	0–20	1.87	4.52	0–23	<0.01
DSB	1.71	3.68	0–21	2.77	3.49	0–21	0.19	0.60	0–3	<0.01

Variables	Overall (N = 96)		Men (n = 55)		Women (n = 41)		P
	N	%	n	%	n	%	
PTSD	22	22.9	13	23.6	9	22.0	0.85
CT	53	52.2	29	52.7	24	58.5	0.57
EA	11	11.7	4	7.4	7	17.5	0.14
PA	17	21.3	14	25.9	6	15.0	0.03
SA	11	14.9	3	5.6	11	27.5	0.02
Relationship status							
Single	6	6.3	3	5.5	3	7.3	0.70
Married	40	41.7	30	54.6	10	24.4	<0.01
Separated	24	25.0	12	21.8	12	29.3	0.40
Widowed	26	27.1	10	18.2	16	39.0	0.02

CUM = cumulative trauma; GDS = Geriatric Depression Scale; SC = sexual concerns; DSB = dysfunctional sexual behavior; CT = childhood trauma; EA = emotional abuse; PA = physical abuse; SA = sexual abuse.

Table 2 Correlations between the variables in the overall sample

	Age	GDS	SC	DSB	PTSD	CT	Physical abuse	Sexual abuse	Emotional abuse	Interpersonal trauma	Accidental trauma	Cumulative trauma
SC	-0.08	0.06	—	0.57***	0.13	0.10	0.19*	0.17	-0.17	0.22*	0.01	0.17
DSB	-0.12	-0.04	0.57***	—	0.01	0.12	0.00	0.05	-0.13	0.01	0.13	0.14

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$ GDS = Geriatric Depression Scale; SC = sexual concerns; DSB = dysfunctional sexual behavior; CT = childhood trauma.

Statistically significant relationships could be observed between the two TSI domains DSB and SC ($r = 0.57$, $P < 0.001$) and between SC and physical abuse ($r = 0.19$, $P < 0.05$) (Table 2). No associations between any other type of abusive experience with either SC or DSB could be detected. Contrary to what was expected, the cumulative effect of trauma (i.e., higher number of traumas experienced) was not statistically significant related to either DSB or SC. In a second step, the different trauma types were assigned to either the “interpersonal trauma” (e.g., sexual abuse) or the “accidental trauma” (e.g., witnessing a severe accident) group. While there was no significant association between the two broad trauma categories with DSB, a significant relationship between SC and interpersonal trauma could be detected ($r = 0.22$, $P > 0.05$) (Table 2).

To further investigate whether individuals suffering from more psychological post-traumatic symptoms also reported more DSB and SC, the correlations between the TSI psychological symptom scales and the TSI sexuality scales were calculated. AA, AI, DIS, as well as IE all correlated significantly with SC (r s ranging from 0.27 to

0.43). Significant associations could also be found between AI, DIS, and IE and DSB (r s ranging from 0.20 to 0.26) (Table 3).

Comparisons of the four PTSD/trauma groups did not show any significant differences across the groups (Table 4). However, results of the Kruskal–Wallis tests indicated substantial differences between them regarding the sexual outcomes, although none reached conventional significance level. Individuals reporting AT and PTSD symptoms scored higher in both TSI scales tapping for sexual outcomes than individuals reporting CT and PTSD symptoms. Nevertheless, and because of the frequently reported impact of age and depression on sexual parameters, these variables were included as potential confounders in the main analyses.

Discussion

To the best of our knowledge, this is the first study investigating the relative effects of trauma and PTSD on sexual behavior in old age. To assess sexual behavior, we administered the TSI subscales “Sexual Concerns” and “Dysfunctional Sexual

Table 3 Correlations between psychological symptoms of trauma (as assessed by the TSI) and sexual behavior and concerns

	Anxious arousal	Anger irritability	Intrusive experiences	Dissociation	Impaired self-reference
SC (n = 73)	0.27**	0.36***	0.14	0.42***	0.43***
DSB (n = 75)	0.07	0.20*	0.05	0.23*	0.26**

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$ SC = sexual concerns; DSB = dysfunctional sexual behavior.

Table 4 Result of analysis of variance (Kruskal–Wallis test) for the means of the continuous variables across the four trauma/PTSD groups

Variables	CT/PTSD+ (n = 10)			CT/PTSD- (n = 31)			AT/PTSD+ (n = 12)			AT/PTSD- (n = 43)			H
	M	SD	Range										
Age	75.90	4.51	69–86	75.90	6.67	60–95	78.50	7.13	70–90	78.91	5.94	68–93	5.5
CUM	2.20	0.63	1–3	2.42	0.72	1–3	2.33	0.89	1–3	2.00	0.79	1–3	5.9
GDS	4.56	3.90	0–13	3.77	3.41	0–13	4.33	3.76	0–13	3.52	3.60	0–11	1.3
SC	2.22	2.91	0–7	3.41	4.61	0–15	6.67	8.82	0–23	2.64	3.57	0–14	1.4
DSB	0.60	1.08	0–3	1.18	2.26	0–8	2.60	6.54	0–21	2.12	3.81	0–14	0.7

CUM = cumulative trauma; GDS = Geriatric Depression Scale; SP = sexual problems (sum score SC + DSB); SC = sexual concerns; DSB = dysfunctional sexual behavior; CT = childhood trauma.

Table 5 Comparison of means and standard deviation of SC and DSB raw scores between studies for men

Scale	Current study		Sample standardization				Clinical sample			
	Trauma ages 60–95 (n = 55)		Younger: ages 18–54 (n = 267)		Older: ages 55 and older (n = 158)		No trauma (n = 29)		Trauma (n = 37)	
	M	SD	M	SD	M	SD	M	SD	M	SD
SC	4.33	3.48	4.30	5.20	2.41	3.61	4.82	4.29	9.73	9.15
DSB	2.77	3.49	2.32	4.20	1.03	2.43	2.24	3.17	6.30	7.44

Sample Standardization [33]; Clinical Sample [20]. SC = sexual concerns; DSB = dysfunctional sexual behavior.

Behavior” capturing sexual dissatisfaction, as well as sexual behaviors that are dangerous, indiscriminate, or used to achieve nonsexual gains [19]. Only few studies have looked at the independent effects of trauma and PTSD on men’s and women’s sexuality, most of which have relied on male combat veterans or focused on sexual dysfunction [3–5,9,16]. Contrary to these studies, we used a sample of older men and women who underwent similar severe and repetitive trauma during childhood within the context of their period of “indentured child laboring.” In addition, we assessed the specific effects of trauma type/category, as well as the cumulative effects of repetitive trauma exposure on sexual parameters and further provided descriptive data of sexual concerns and dysfunctional sexual behavior in older adults instead of reporting on sexual functioning.

The occurrence of SC and DSB was found to be relatively low in this study, considering that the participants were former indentured child laborers, individuals highly susceptible to having a history of traumatic experiences. However, when comparing the means of SC and DSB of the participants of this study to the means of older participants of another study, the low prevalence rate can be understood in this context (Tables 5 and 6). The means of SC and DSB found for men were twice as high compared with older men in the sample standardization of the TSI [33]. For women, the mean score of SC was similar, although the mean score of DSB was slightly lower

in this study. On the other hand, when comparing individuals with and without trauma history without controlling for age, women reported even more SC and DSB than men [19]. The study conducted by Elliott [33] is the only study known to have investigated SC and DSB specifically in an older sample. It illustrates how age is an important factor relating to sexuality and that it should be included in the analyses. The same can be said for gender differences.

In the present study, we found a significant gender difference in sexual concerns and sexual dysfunction, in that men were significantly more distressed and reported more sexual dissatisfaction and more maladaptive sexual behavior compared with women. It seems that trauma exposure has more impairing effects on men’s sexual well-being, compared with women in old age. Alternatively, it is also likely that women consider sexuality or intimacy less important in older age and/or that recall bias is more present in women compared with men [34]. Gender differences were more accentuated for sexual concerns compared with dysfunctional sexual behavior.

Although there is an extensive body of literature suggesting the tendency for sexual abuse alone to predict sexual symptoms (e.g., Briere et al. [13,20]), only physical abuse was significantly associated with sexual concerns in this study. None of the other trauma exposure types (i.e., sexual or emotional abuse) were associated with either SC or DSB. These findings are in line with a recent

Table 6 Comparison of means and standard deviation of SC and DSB raw scores between studies for women

Scale	Current study		Sample standardization				Clinical sample			
	Trauma ages 60–95 (n = 41)		Younger: ages 18–54 (n = 291)		Older: ages 55 and older (n = 120)		No trauma (n = 43)		Trauma (n = 261)	
	M	SD	M	SD	M	SD	M	SD	M	SD
SC	1.87	4.52	4.06	5.27	1.71	3.52	5.54	6.24	10.57	2.68
DSB	0.19	0.60	2.29	3.94	0.68	1.47	2.81	4.54	4.64	5.88

Sample Standardization [33]; Clinical Sample [20]. SC = sexual concerns; DSB = dysfunctional sexual behavior.

epidemiologic study, which found a significant relationship between previous experiences of any kind of abuse and sexual impairment of various domains of women's sexual functioning [10]. The study further revealed that the specific form of abuse was irrelevant to the development of sexual problems, suggesting that different types of abuse—whether they are of emotional, sexual, or physical nature—all have similar effects on one's emotional regulation and sexuality. This study also supports our findings concerning the artificial categorization of the various traumas into interpersonal vs. accidental—interpersonal trauma was more significantly associated with SC compared with accidental trauma. Further, no specific effects of cumulative trauma on sexual behavior could be detected in the present study, but additional research including both men and women and assessing different types of trauma events is needed.

Overall, the results of this study support that neither time of the traumatic event nor screening positively for PTSD symptoms is an independent risk factor or predictor for sexual problems. However, group comparisons tentatively indicate that individuals who screened positively for PTSD symptoms and reported AT showed more SC and DSB compared with individuals without PTSD symptoms or reporting CT. Although this finding did not reach statistical significance—possibly due to restricted sample size—the relative difference in scores between the two groups tentatively points toward a different impact of time of trauma exposure (childhood vs. adulthood) on sexual behavior. These results are not in line with literature suggesting that CT has more drastic effects on sexual function and concerns than AT [19]. However, there is no study comparing the impact of childhood vs. AT and PTSD symptoms.

In addition, there is a general paucity of data regarding sexual functioning in cohorts of older adults. Although research has repeatedly shown that sexual functioning decreases as a function of age, this does not seem to be true for all aspects of an individual's sexuality, suggesting that age cannot be regarded a global risk factor for the development of sexual problems [10,35]. This would also explain why the TSI subscale of SC showed considerably more variation across participants compared with the DSB scale. It seems that sexuality and intimacy remains important in later life—independent of physiologic sexual functioning—and that high relationship qualities and preservation of sexual activity can significantly contribute to sexual satisfaction.

Limitations

The results of this study should be considered in light of several limitations. First, the current study is a substudy within a bigger project called “Former Indentured Children in Old Age” so that the data were used for a secondary analysis. In this sense, the used measurements were not designed to the answer the research questions of this study specifically. However, the TSI is a well-established questionnaire for the assessment of trauma correlates, including abnormal sexual symptoms [19]. Future research should further assess other important factors investigating this relationship, such as sexual orientation and physical health.

Second, the results of this study cannot be generalized to the overall population, as this sample is homogenous in terms of race, ethnicity, and socioeconomic status. Besides, due to the uniqueness of the recruited participants (former indentured child laborers), the sample size was relatively small, particularly when considering the group comparisons. This may have led to restrictive statistical power for some analyses. Nevertheless, the chi-squared approximation of the Kruskal–Wallis test has proven to be highly satisfactory also when samples are small [36].

Third, the extrapolation of our study results to other populations might be limited due to the specific sample characteristics of our former child laborer cohort, which represents an unusual subpopulation in terms of life histories and characteristics. However, long-lasting traumatic experiences during childhood are prevalent even in more common community samples [37].

Fourth, this study had access to limited data, not addressing the effects, for example, of relationship satisfaction, which may be an important confounder when investigating sexual functioning and concerns. Some of the participants did not respond to the sex-related questions, because they claimed that sexual activity was not a part of their lives anymore. The frequency of sexual relationships was also not controlled for, which means that individuals in old age reporting no SC and DSB at all may actually have an inactive sex life.

Fifth, it is not possible to exclude the fact that participants' reports were affected by biases, as the data collected relied on retrospective self-reports. The retrospective reports may have been affected by recall bias, especially considering the presence of cognitive impairment found in this sample. In addition, sexual problems have always been a matter of shame, nondisclosure, and uneasiness

[38]. Thus, the sexual outcomes may have been affected by the openness of these elder participants. However, we did not find evidence for such biases in our study, as the TSI includes three validity scales to help indicate invalid profiles and also control for social desirability bias.

Sixth, this was a cross-sectional study, and the development of sexuality across the entire lifespan could therefore not be assessed. Several studies indicate a gradual decline in sexual activity according to age, but it is not clear whether these changes are rather related to cohort effects or to the aging process. There are only few longitudinal studies investigating the stability of sexual activity and interest, and these studies present mixed findings [39,40]. Future research should further explore sexuality over time.

Last but not least, an important methodological issue to be mentioned is the high age of our sample that might have introduced bias. It is well known that sexual behavior, as well as importance and interest in such activities, decreases as a function of age. One might question the validity of including individuals aged 60 and older in studies investigating sexuality, as the reasons for sexual impairment in older women (e.g., due to menopause and/or decrease in sex steroids) might be markedly different from the factors affecting sexual function in younger individuals and might have masked the independent effects of trauma exposure and PTSD. Nevertheless, exploration of sexuality in older cohorts is urgently needed and has been crucially neglected in the past. Furthermore, the previously mentioned broader assessment of sexuality that does not rely on sexual functioning alone allows a more informative and holistic picture of perceived and experienced sexuality in older individuals.

Conclusion

Findings from this study indicate that screening positively for PTSD symptoms and experiencing trauma during adulthood are associated with higher rates of dysfunctional sexual behavior and sexual concerns. However, neither a positive PTSD status nor the time of the traumatic event seems to be an independent risk factor/predictor for sexual problems. Overall, our results suggest that the association between trauma, PTSD, and sexual function and concerns is affected by other factors, such as the type of the traumatic experience, and that gender and age differences should also be accounted for when investigating this rela-

tionship. Additional studies are needed to further explore the role of trauma type and cumulative trauma exposure as well as the relative role of traumatization and PTSD symptomatology in sexuality. Clarifying whether the risk carrier is the exposure to trauma or PTSD in itself may be essential in choosing the right treatment for sexual problems. However, sexuality should be part of the assessment and management of both trauma and PTSD therapy. General practitioners and psychiatrists should also be aware of the consequences that trauma and/or PTSD can have on sexual well-being.

Acknowledgments

Andrea Burri reports an Ambizione personal career fellowship from the Swiss National Science Foundation. The founders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Corresponding Author: Karin Rechsteiner, MSc, University of Zurich—Psychology, Binzmühlestrasse 14/17, Zürich 8050, Switzerland. Tel: 41-44-635-73-12; E-mail: rechsteiner.karin@gmail.com

Conflict of Interest: The author(s) report no conflicts of interest.

References

- Maercker A, Horn A. A socio-interpersonal perspective of PTSD: The case for environments and interpersonal processes. *Clin Psychol Psychother* 2012;20:465–81. In press.
- McFarlane A. The long-term costs of traumatic stress: Intertwined physical and psychological consequences. *World Psychiatry* 2010;9:3–10.
- Cosgrove DJ, Gordon Z, Bernie JE, Hami S, Montoya D, Stein MB, Monga M. Sexual dysfunction in combat veterans with post-traumatic stress disorder. *Urology* 2002;60:881–4.
- Hossain M, Zimmerman C, Abas M, Light M, Watts C. The relationship of trauma to mental disorders among trafficked and sexually exploited girls and women. *Am J Public Health* 2010;100:2442–9.
- Kotler M, Cohen H, Aizenberg D, Matar M, Loewenthal U, Kaplan Z, Zemishlany Z. Sexual dysfunction in male post-traumatic stress disorder patients. *Psychother Psychosom* 2000;69:309–15.
- Litz BT, Keane TM, Fisher L. Physical health complaints in combat-related post-traumatic stress disorder: A preliminary report. *J Trauma Stress* 1992;5:131–41.
- Solursh LP, Surlush DS. Male erectile disorders in Vietnam combat veterans with chronic post-traumatic stress disorder: A special issue on sexuality and disability in adolescence and beyond. *Int J Adolesc Med Health* 1994;7:119–24.
- Green BL. Posttraumatic stress disorder: Symptom profiles in men and women. *Curr Med Res Opin* 2003;19:200–4.
- Hutton HE, Treisman GJ, Hunt WR, Fishman M, Kendig N, Swetz A, Lyketsos CG. HIV risk behaviors and their relationship to posttraumatic stress disorder among women prisoners. *Psychiatr Serv* 2001;52:508–13.

- 10 Burri A, Spector T. Recent and lifelong sexual dysfunction in a female UK population sample: Prevalence and risk factors. *J Sex Med* 2011;8:2420–30.
- 11 McDevitt-Murphy ME, Weathers FW, Adkins JW. The use of the Trauma Symptom Inventory in the assessment of PTSD symptoms. *J Trauma Stress* 2005;18:63–7.
- 12 VanRoode T, Dickson N, Herbison P, Paul C. Child sexual abuse and persistence of risky sexual behaviors and negative sexual outcomes over adulthood: Findings from a birth cohort. *Child Abuse Negl* 2009;33:161–72.
- 13 Briere J, Kaltman S, Green BL. Accumulated childhood trauma and symptom complexity. *J Trauma Stress* 2008;21:223–6.
- 14 Cloitre M, Cohen LR, Edelman R, Han H. Posttraumatic stress disorder and extent of trauma exposure as correlates of medical problems and perceived health among women with childhood abuse. *Women Health* 2001;34:1–17.
- 15 Follette VM, Polusny MA, Bechtle AE, Naugle AE. Cumulative trauma: The impact of child sexual abuse, adult sexual assault, and spouse abuse. *J Trauma Stress* 1996;9:25–35.
- 16 Green BL, Goodman LA, Krupnick JL, Corcoran CB, Petty RM, Stockton P, Stern NM. Outcomes of single vs. multiple trauma exposure in a screening sample. *J Trauma Stress* 2000;13:271–86.
- 17 Burri A, Maercker A, Krammer S, Simmen-Janevska K. Childhood trauma and PTSD symptoms increase the risk of cognitive impairment in a sample of former indentured child laborers in old age. *PLoS ONE* 2013;8:1–8.
- 18 Leuenberger LS. *Versorgt und vergessen*. Zurich: Rotpunktverlag; 2008.
- 19 Briere J. *Trauma Symptom Inventory: Professional manual*. Odessa: Psychological Assessment Resources; 1995.
- 20 Briere J, Elliott DM, Harris K, Cotman A. Trauma Symptom Inventory: Psychometrics and association with childhood and adult trauma in clinical samples. *J Interpers Violence* 1995;10:387–401.
- 21 Krammer S, Simmen-Janevska K, Maercker A. In Richtung "Komplexe PTBS": Die deutsche Version des Trauma Symptom Inventory (TSI) zur Erfassung komplexer Traumafolgen. *Psychother Psychosom Med Psychol* 2013;63:318–26.
- 22 Bernstein DP, Fink L. *Childhood Trauma Questionnaire: A retrospective self report manual*. San Antonio: The Psychological Corporation; 1998.
- 23 Gast U, Rodewald F, Benecke HH, Driessen M. *Deutsche Bearbeitung des Childhood Trauma Questionnaire (unauthorized)*. Unpublished manuscript, Medical School of Hanover; 2001.
- 24 World Health Organization. *Composite International Diagnostic Interview (CIDI), version 2.1*. World Health Organization: Geneva 2007; 2007.
- 25 Wittchen HU. Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): A critical review. *J Psychiatr Res* 1994;28:57–84.
- 26 Maercker A. *Posttraumatische Belastungsstörungen: Psychologie der Extrembelastungsfolgen bei Opfern politischer Gewalt*. Lengerich: Pabst; 1998.
- 27 Breslau N, Peterson EL, Kessler RC, Schultz LR. Short screening scale for DSM-IV posttraumatic stress disorder. *Am J Psychiatry* 1999;156:908–11.
- 28 Siegrist P, Maercker A. *Deutsche Fassung der short screening Scale for DSM-IV Posttraumatic Stress Disorder. Aktueller Stand der Validierung*. *Trauma Gewalt* 2010;4:208–13.
- 29 Bohnert KM, Breslau N. Assessing the performance of the short screening scale for posttraumatic stress disorder in a large nationally representative survey. *Int J Methods Psychiatr Res* 2011;20:1–5.
- 30 Sheikh JI, Yesavage JA. *Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version*. *Clin Gerontol* 1986;5:165–73.
- 31 Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, Leirer VO. Development and validation of a geriatric depression screening scale: A preliminary report. *J Psychiatr Res* 1983;17:37–49.
- 32 Gauggel S, Birkner B. Diagnostik depressiver Störungen bei älteren Menschen: Eine Übersicht über die Entwicklung und Evaluation der „Geriatric Depression Scale“ (GDS). *Z Gerontopsychol Psychiatry* 1998;11:159–71.
- 33 Elliott DM. The impact of child versus adult trauma: Gender and age differences. Paper presented at the annual meeting of the International Society for Traumatic Stress Studies: San Antonio; 1993.
- 34 Beyer S. Gender differences in self-perception and negative recall biases. *Sex Roles* 1998;38:103–33.
- 35 Cayan S, Akbay E, Bozlu M, Canpolat B, Acar D, Ulusoy E. The prevalence of female sexual dysfunction and potential risk factors that may impair sexual function in Turkish women. *Urol Int* 2004;72:52–7.
- 36 Canover WJ. *Practical nonparametric statistics (Wiley series in probability and statistics)*. 3rd edition. New York: Wiley; 1999. 592pp.
- 37 Maercker A, Forstmeier S, Wagner B, Glaesmer H, Braehler E. Posttraumatic stress disorder in Germany. Results of a nationwide epidemiological study. *Nervenarzt* 2008;79:577–86.
- 38 Bitzer J, Platano G, Tschudin S, Alder J. Sexual counseling in elderly couples. *J Sex Med* 2008;5:2027–43.
- 39 George LK, Weiler SJ. Sexuality in middle and late life. *Arch Gen Psychiatry* 1981;38:919–23.
- 40 Hällström T, Samuelsson S. Changes in women's sexual desire in middle life: The longitudinal study of women in Gothenburg. *Arch Sex Behav* 1990;19:259–68.