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# Patterns of Childhood Abuse and Neglect as Predictors of Treatment Outcome in Inpatient Psychotherapy: A Typological Approach

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**Key Words**
Childhood maltreatment · Childhood abuse · Childhood neglect · Childhood trauma · Treatment outcome · Inpatient psychotherapy · Childhood trauma questionnaire

**Abstract**
***Background:*** Childhood maltreatment is associated with the development and maintenance of mental disorders. The purpose of this naturalistic study was (a) to identify different patterns of childhood maltreatment, (b) to examine how these patterns are linked to the severity of mental disorders and (c) whether they are predictive of treatment outcome. ***Methods:*** 742 adult patients of a university hospital for psychotherapy and psychosomatics were assessed at intake and discharge by standardized questionnaires assessing depression (Beck Depression Inventory, BDI) and general mental distress (Symptom Check List-90-R, SCL-90-R). Traumatic childhood experience (using the Childhood Trauma Questionnaire, CTQ) and ICD-10 diagnoses were assessed at intake. ***Results:*** The patients could be allocated to three different patterns of early childhood trauma experience: mild traumatization, multiple traumatization without sexual abuse and multiple traumatization with sexual abuse. The three patterns showed highly significant differences in BDI, General Severity Index (GSI) and in the number of comorbidity at intake. For both BDI and GSI a general decrease in depression and general mental distress from intake to discharge could be shown. The three patterns differed in BDI and GSI at intake and discharge, indicating lowest values for mild traumatization and highest values for multiple traumatization with sexual abuse. Patients with multiple traumatization with sexual abuse showed the least favourable outcome. ***Conclusion:*** The results provide evidence that the severity of childhood traumatization is linked to the severity of mental disorders and also to the treatment outcome in inpatient psychotherapy. In the study, three different patterns of childhood traumatization (mild traumatization, multiple traumatization without sexual abuse, multiple traumatization with sexual abuse) showed differences in the severity of mental disorder and in the course of treatment within the same therapy setting.


## Background

Child maltreatment is defined as any act of commission or omission by a parent or a caregiver that results in harm, potential for harm, or threat of harm to a child [1].


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The most commonly described types of child maltreatment are physical abuse, sexual abuse, emotional abuse and emotional neglect [2]. Some studies defined more types of child maltreatment, including several psychosocial burdens like parental separation or divorce [3, 4].

The majority of studies focused on the impact of a single type of childhood abuse or neglect. Only few studies examined the co-occurrence of multiple forms of childhood abuse and neglect [5–10]. The demand for the exploration of co-occurring types of childhood abuse and neglect is not new [11, 12] and there is strong evidence that adverse childhood experiences are interrelated rather than occurring independently [13]. A single type of childhood abuse or neglect does not occur in isolation, but rather in an adverse environment. Thus, it is likely that e.g. sexual abuse is accompanied by other forms of maltreatment, such as emotional abuse or neglect. Since these single trauma types might be connected implicitly, the effects of their co-occurrence should be analysed.

The studies that have analysed the effects of co-occurring types of abuse or neglect on the development of mental disorders focused on the cumulative effect of multiple forms of childhood traumatization, finding a strongly graded relationship between the number of adverse childhood experiences and health and social outcomes [13].

So far, few studies have focused on the impact of specific constellations of early childhood abuse and neglect on the severity of mental disorders. We understand specific constellations as a set of interrelated forms of childhood abuse or neglect including sexual abuse, physical abuse, physical neglect, emotional abuse and emotional neglect. Identifying different patterns of constellations of abuse and neglect could specify the quantitative effect of multiple forms of child maltreatment on the psychological functioning and provide a deeper insight into qualitative effects of constellations of abuse and neglect on the severity of mental illness.

Early childhood traumatization is associated with the development, maintenance and treatment outcome of mental disorders like depression [14], schizophrenia [15], substance-related disorders [16], post-traumatic stress disorders [17] and bipolar disorders [18].

Sexual abuse is considered to be a non-specific risk factor for the development of various mental disorders [19–22]. Most studies have examined the impact of sexual abuse in childhood on the development and the severity of mental disorders [20], since arguably it results in more severe traumatization than emotional abuse or emotional neglect. Recently, more attention was drawn to the impact of non-sexual forms of childhood maltreatment [2]. Recent studies showed a significant role of emotional abuse and neglect in anxiety disorders [23–27], depressive disorders, suicide attempts, drug use and risky sexual behaviour [2].

The impact of childhood maltreatment on the comorbidity of mental disorders was confirmed for both lifetime comorbidity [4, 28, 29] and cross-sectional comorbidity [30–32].

Another area of interest is the influence of patterns of abuse and neglect on the course of treatment. Many studies used a diagnosis-specific approach identifying predictors for treatment outcomes [33], ignoring the heterogeneity of patients with the same ICD diagnosis ('homogeneity myth', [34]). To identify other, non-diagnostic client variables would be a more sophisticated approach to examine predictors of treatment outcome [33]. Comparatively few studies examined constellations of childhood traumatization as predictors for treatment outcomes in psychotherapy. In their review Nanni et al. [35] found only 10 studies that examined how childhood traumatization and treatment outcomes are linked. Their main conclusion was that childhood traumatization was associated with lower rates of response or remission during treatment for depression.

An additional reason to study the relation between childhood traumatization and treatment outcome is that to date, evidence of the significance of client variables as predictors of treatment outcome is still mixed and unsatisfying [33].

Since so far there is no algorithm or assignment rule for how the different types of abuse and neglect should be combined into a specific pattern, an inductive approach is useful to generate hypotheses on the assignment of the single trauma types to patterns of abuse and neglect.

The objectives of our study were: (1) to identify different patterns of childhood traumatization, (2) to examine how these patterns are linked to the severity of mental disorders and (3) whether they are predictive of treatment outcome.

## Methods

*Sample Characteristics*

The sample comprised 742 patients consecutively admitted to the Department of Psychotherapy and Psychosomatic Medicine of the University Hospital Carl Gustav Carus Dresden between 05/2007 and 12/2010. The total number of patients treated over

**Table 1.** Sociodemographic and clinical characteristics of the total sample (n = 742)

| | Total number | Percentage | Mean | SD |
|---|---|---|---|---|
| Age, years | | | 36.72 | 12.70 |
| Gender | | | | |
| Male | 243 | 32.7 | | |
| Female | 499 | 67.3 | | |
| Level of education | | | | |
| Current school attendance | 4 | 0.5 | | |
| No graduation | 15 | 2 | | |
| School for mentally or physically handicapped | 5 | 0.7 | | |
| Secondary school | 79 | 10.6 | | |
| Secondary modern school | 368 | 49.5 | | |
| A level | 253 | 34.1 | | |
| Other | 11 | 1.5 | | |
| Diagnosis | | | | |
| Mental and behavioural disorders due to psychoactive substance use F10–F19 | 98 | 13.2 | | |
| Affective disorders F30–F39 | 429 | 57.7 | | |
| Anxiety disorders F40–F41 | 313 | 42.1 | | |
| Obsessive-compulsive disorders F42 | 55 | 7.4 | | |
| Reaction to severe stress, and adjustment disorders F43 | 156 | 21 | | |
| Dissociative disorders F44 | 4 | 0.5 | | |
| Somatoform disorders F45 | 235 | 31.6 | | |
| Eating disorder F50 | 51 | 6.7 | | |
| Number of comorbidities | | | 2.16 | 1.85 |
| Duration, days | | | 39.81 | 2.15 |

that period was 1,059. Seven hundred and forty-two patients met the following inclusion criteria: (a) written informed consent to the use of clinical data for psychotherapy research, (b) adequate comprehension of the German language, (c) duration of treatment at least 30 days, and (d) complete data of the Childhood Trauma Questionnaire (CTQ). Exclusion criteria for the inpatient therapy setting included acute psychoses, threat of harm to self or others and acute addictive disorders. The patients gave informed consent to the use of clinical data for research purposes. The study was approved by the ethics committee of the Technical University Dresden.

Precondition for intake was a pre-admission diagnostic including a detailed clinical assessment by an experienced clinician covering ICD-10 diagnoses, the history of the disorder, its current manifestation, previous treatments and treatment motivation. Sociodemographic and clinical characteristics of the total sample are shown in table 1.

*Assessment*

Structured Clinical Interview for ICD-10 Disorders [36]

The Structured Clinical Interview for ICD-10 Disorders is a semi-structured interview for the assessment of the ICD-10 diagnoses. The diagnostic interview was conducted at intake by trained psychologists who were not involved in the clinical management of the patients. The raters were regularly trained and supervised by an expert. Assessment of inter-rater reliability was part of the interview training. Raters were required to achieve a minimum of agreement of 85% with the master coder.

Childhood Trauma Questionnaire [37]

The CTQ is a 28-item self-report inventory that provides a brief, reliable, and valid screening for childhood abuse and neglect. It assesses five types of traumatization – emotional, physical, and sexual abuse, and emotional and physical neglect. The German CTQ version [38] was used.

Symptom Check List-90-R [39]

The Symptom Check List-90-R (SCL-90-R) is a 90-item self-report inventory that measures the general mental distress over the 7 last days. The SCL-90-R provides a General Severity Index (GSI) as an index for overall mental distress. The SCL-90-R was completed at intake and discharge. The German version of the SCL-90-R [40] was used.

Beck Depression Inventory [41]

The Beck Depression Inventory (BDI) is a 21-item, self-report rating inventory that measures symptoms of depression. The test provides a total score, indicating the severity of the depression. The BDI was completed at intake and discharge. The German version of the BDI [42] was used.

The CTQ was completed at intake, all other measures were collected at the time of admission and release.

*Treatment*

All patients were treated within an inpatient multimodal psychotherapy setting. The treatment corresponded to the treatment criteria of 'complex psychosomatic treatment of mental and psy-

chosomatic disorders and behavioural disorders' in the German catalogue for operations and procedures for psychosomatic medicine [43–45].

Inpatient multimodal psychotherapy is a treatment programme that includes psychodynamic individual and group therapy, communicative movement therapy, music therapy, art therapy, various relaxation methods, training in social competences and psychoeducation. Within certain diagnosis groups, additional therapy elements like anxiety exposure therapy, dialectical behaviour therapy, Eye Movement Desensitization and Reprocessing or pharmacological treatment were applied if indicated. Patients were assigned to treatment components based on pre-admission diagnostic. Patients participated in approximately 25 h of therapy per week (approximately 5 h per day from Monday to Friday). The duration of treatment was limited by the health fund.

The treatment was performed by a therapeutic team that consisted of doctors of psychosomatic medicine and psychotherapy, psychological psychotherapists, graduate psychologists, art therapists, body psychotherapists, music therapists, social pedagogues and nurses. There were regular team meetings to monitor the therapeutic process, treatment decisions were made by the team.

*Statistical Analyses*

To identify patterns of childhood traumatization, a cluster analysis was conducted. Because of the large sample size, a two-step cluster analysis was chosen. In step 1 the cases are clustered into small subclusters, in step 2 these subclusters are clustered into the desired number of clusters.

Based on the log-likelihood distance measure and the Bayesian Information Criterion the number of clusters was determined.

To quantify the 'goodness' of this cluster solution, the silhouette coefficient was used. This coefficient is a measure for both, cohesion within a cluster and separation between clusters. For each element in a cluster, the average distance to all other elements in its cluster and the average distance to all elements in each of the other clusters are calculated. For each element, the silhouette measure is the difference between the smallest average between-cluster distance and the average within-cluster distance, divided by the larger of the two distances. In a good solution, the within-cluster distances are small and the between-cluster distances are large, resulting in a silhouette measure close to the maximum of 1. The silhouette measure ranges from −1 to +1. Results can be classified as 'good' (>0.5), 'fair' (0.2 <>0.5) or 'poor' (<0.2) [46].

To examine differences between patterns over time, a general linear model (GLM) with repeated measures was used. The level of depression and the level of general distress for the different clusters were compared at the beginning of the inpatient psychotherapy and at discharge. The number of comorbidities was entered as a covariate. Contrasts and post hoc tests were computed to identify differences between the single clusters.

For normally distributed variables the GLM with means and standard deviations was used. For categorical variables the $\chi^2$ test was used. To identify differences between the different patterns standardized residuals are reported. Negative residuals indicate under-representation, positive residuals indicate over-representation.

To determine the size of the differences between clusters, effect sizes (Cohen's d and $\eta^2$) were computed. According to Cohen [47], d > 0.20 indicates a small, d > 0.50 a moderate and d > 0.80 a large effect; $\eta^2 = 0.01$ indicates a small, $\eta^2 = 0.06$ a moderate and $\eta^2 = 0.14$ a large effect.

Data was analysed with the Software Package for Social Sciences for Windows (SPSS), version 21.

## Results

*Cluster Analysis*

The two-step cluster analysis resulted in a three-cluster solution. Cluster 1 included 330 cases (44.5%), cluster 2 240 cases (32.2%) and cluster 3 172 cases (23.2%). The silhouette coefficient was 0.4 and indicated an almost good fit of the cluster solution. Cluster 1 showed low values in all CTQ scales except for physical neglect. Cluster 1 was labelled as 'mild traumatization'. Cluster 2 showed high values of emotional abuse and emotional neglect, but low values of physical and sexual abuse. This cluster was labelled as 'multiple traumatization without sexual abuse'. Cluster 3 also showed high values of emotional abuse and emotional neglect, but in contrast to cluster 1 and cluster 2 this group scored high on the sexual abuse scale. Cluster 3 was labelled as 'multiple traumatization with sexual abuse'. Cluster 3 is the only cluster above the cut-off of 12 for the CTQ subscale sexual abuse [48].

The post hoc tests revealed highly significant differences between the three clusters for nearly all CTQ scales (table 2), the exceptions being that cluster 1 and cluster 2 did not differ in the extent of physical neglect and sexual abuse.

*Cluster Characteristics at Intake*

The three clusters were tested for differences in sociodemographic and medical characteristics such as age, gender, level of education, treatment duration, number of comorbid disorders and occurrence of different ICD-10 disorders.

Differences were found for gender ($\chi^2 = 19.662$, p = 0.000). Compared to cluster 1 (1:1.6) and cluster 2 (1:2) the ratio of men to women was much higher in cluster 3 (1:4).

The three clusters did not differ in age (F = 1.025, p = 0.359), level of education ($\chi^2 = 12.807$, p = 0.383), and treatment duration (F = 1.308, p = 0.272).

The number of concurrent disorders differed between the three clusters (F = 28.211, p = 0.000). Patients in cluster 3 had a significantly higher number of concurrent diagnoses than both of the other clusters. A number of disorders were not equally distributed across the clusters, namely affective disorders ($\chi^2 = 23.397$, p = 0.000), anxiety

**Table 2.** Characteristics of the three-cluster solution

| | Combined | Cluster 1 | Cluster 2 | Cluster 3 | F/$\chi^2$ | p | Post hoc (Bonferroni) standardized residuals |
|---|---|---|---|---|---|---|---|
| n | 742 | 330 (44.5%) | 240 (32.3%) | 172 (23.2%) | | | |
| Age, years | 36.72±12.70 | 37.29±14.10 | 35.78±11.95 | 36.95±10.72 | F = 1.025 | 0.359 | |
| Sex | | | | | | | |
| Male | 243 (32.7%) | 127 (38.5%) | 83 (34.6%) | 33 (19.2%) | $\chi^2$ = 19.662 | 0.000 | c1 = 1.8/c2 = 0.5/c3 = –3.1 |
| Female | 499 (67.3%) | 203 (61.5%) | 157 (65.4%) | 139 (80.8%) | | | c1 = –1.3/c2 = –0.3/c3 = 2.2 |
| Number of comorbidities | 2.16±1.85 | 1.76±1.53 | 2.09±1.67 | 3.02±2.33 | $\chi^2$ = 28.211 | 0.000 | c1<c2 n.s./c2<c3***/c1<c3*** |
| Duration of treatment | 39.82±41.06 | 39.60±41.05 | 44.06±33.03 | 34.08±50.64 | F = 1.308 | 0.272 | |
| CTQ emotional abuse | 11.86±5.90 | 7.15±2.27 | 13.05±3.93 | 19.22±4.49 | F = 709.182 | 0.000 | c1<c2***/c2<c3***/c1<c3*** |
| CTQ physical abuse | 7.92±4.69 | 5.37±0.97 | 7.21±2.81 | 13.81±5.88 | F = 375.347 | 0.000 | c1<c2***/c2<c3***/c1<c3*** |
| CTQ sexual abuse | 7.93±5.57 | 5.72±1.97 | 5.96±2.11 | 14.93±7.53 | F = 336.360 | 0.000 | c1<c2 n.s./c2<c3***/c1<c3*** |
| CTQ emotional neglect | 13.46±5.85 | 8.36±2.93 | 16.05±3.63 | 19.62±4.02 | F = 705.141 | 0.000 | c1<c2***/c2<c3***/c1<c3*** |
| CTQ physical neglect | 13.00±2.00 | 12.88±1.24 | 12.85±2.44 | 13.42±2.38 | F = 5.085 | 0.006 | c1<c2 n.s./c2<c3***/c1<c3*** |
| Substance disorder (F10–F19) | 98 (13.2%) | 36 (10.9%) | 36 (15.0%) | 26 (15.1%) | $\chi^2$ = 2.740 | 0.254 | |
| Affective disorder (F30–F39) | 429 (57.9%) | 159 (48.2%) | 154 (64.4%) | 116 (67.4%) | $\chi^2$ = 23.397 | 0.000 | c1 = –2.7/c2 = 1.3/c3 = 1.6 |
| Anxiety disorder (F40–F41) | 313 (42.2%) | 119 (36.1%) | 103 (42.9%) | 91 (52.9) | $\chi^2$ = 13.235 | 0.001 | c1 = –1.7/c2 = 2.0/c3 = 2.2 |
| Obsessive-compulsive disorder (F42) | 55 (7.4%) | 25 (7.6%) | 13 (5.4%) | 17 (9.9%) | $\chi^2$ = 2.996 | 0.224 | |
| PTSD and adjustment disorder (F43) | 156 (21%) | 32 (9.7%) | 41 (17.1%) | 83 (48.3%) | $\chi^2$ = 104.563 | 0.000 | c1 = –4.5/c2 = –1.3/c3 = 7.8 |
| Dissociative disorder (F44) | 4 (0.5%) | 2 (0.6%) | 1 (0.4%) | 1 (0.6%) | – | – | |
| Somatoform disorder (F45) | 235 (31.7%) | 97 (29.4%) | 66 (27.5%) | 72 (41.9%) | $\chi^2$ = 10.972 | 0.004 | c1 = –0.7/c2 = –1.1/c3 = 2.4 |
| Eating disorder (F50) | 51 (6.9%) | 25 (7.6%) | 13 (5.4%) | 13 (7.6%) | $\chi^2$ = 1.176 | 0.555 | |

Mean ± SD or number and percent. PTSD = Post-traumatic stress disorder.

disorders ($\chi^2$ = 13.235, p = 0.001), post-traumatic stress disorder and adjustment disorders ($\chi^2$ = 104.563, p = 0.000) and somatoform disorders ($\chi^2$ = 10.972, p = 0.004). Substance disorders ($\chi^2$ = 2.740, p = 0.254), obsessive-compulsive disorders ($\chi^2$ = 2.996, p = 0.224), and eating disorders ($\chi^2$ = 1.176, p = 0.555) were equally prevalent in all three clusters. Differences in dissociative disorders were not tested due to the low number of cases. Characteristics of the three clusters are summarized in table 2.

*Treatment Outcome of the CTQ Clusters*

A GLM with repeated measures was conducted for BDI and GSI (intake and discharge) with cluster as a group factor and the number of comorbid diagnoses as a covariate. The results are displayed in table 3.

GLM for the BDI showed a highly significant main effect for time (F = 79.017, p = 0.000), indicating a significant decrease in depression in all three clusters between intake and discharge. The effect size for the total sample was d = 0.60. The pre-post effect sizes for the three clusters varied. The treatment effect for cluster 1 was d = 0.58, d = 0.82 for cluster 2, and d = 0.52 for cluster 3. In addition, the cluster effect was significant (F = 20.694, p = 0.000).

To identify differences between the clusters two separate univariate variance analyses (ANOVA) were conducted for BDI values at intake and discharge. The post hoc tests showed that the BDI scores of all three clusters differed significantly at intake and discharge, respectively.

Cluster 1 showed the lowest values, cluster 3 the highest values. The results of the ANOVA are summarized in table 4.

The interaction of cluster and time was also significant (F = 3.409, p = 0.034). Simple contrasts revealed highly significant differences between all three clusters (F = 20.694, p = 0.000) at discharge.

The covariable number of diagnoses had a highly significant main effect (F = 62.083, p = 0.000); no interaction of number of diagnoses and time was found (F = 3.513, p = 0.061). Post hoc tests showed that patients in cluster 3 had a significantly higher number of comorbid disorders than patients in both other clusters. Cluster 1 and cluster 2 were equal in the number of comorbid disorders. The results are illustrated in figure 1.

GLM for the GSI showed a highly significant main effect for time (F = 81.131, p = 0.000), indicating a significant decrease in general mental distress in all three clusters between intake and discharge. The effect size for the total sample was d = 0.70. The treatment effect for cluster 1 was d = 0.61, for cluster 2 d = 0.83, and for cluster 3 d = 0.51. The cluster effect was also significant (F = 38.540, p = 0.000).

**Table 3.** GLM with repeated measures BDI and GSI

| | Total | | Cluster 1 | | Cluster 2 | | Cluster 3 | | F | Partial $\eta^2$ | Contrast (simple) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | intake | discharge | intake | discharge | intake | discharge | intake | discharge | | | |
| BDI | | | | | | | | | | | |
| Mean ± SD | 21.06±11.56 | 14.10±11.72 | 17.37±10.74 | 11.16±9.67 | 22.29±10.27 | 13.88±10.78 | 26.89±12.26 | 20.51±14.23 | | | |
| ES | | 0.60 | | 0.58 | | 0.82 | | 0.52 | | | |
| Cluster | | | | | | | | | 20.694*** | 0.068 | c1<c2***/ c2<c3***/ c1<c3*** |
| Time | | | | | | | | | 79.017*** | 0.122 | |
| Cluster × time | | | | | | | | | 3.409* | 0.012 | |
| NOC | | | | | | | | | 62.083*** | 0.098 | |
| NOC × time | | | | | | | | | 3.513 n.s. | 0.006 | |
| GSI | | | | | | | | | | | |
| Mean ± SD | 1.28±0.67 | 0.81±0.66 | 1.03±0.59 | 0.67±0.34 | 1.32±0.58 | 0.84±0.60 | 1.85±0.80 | 1.44±0.94 | | | |
| ES | | 0.70 | | 0.61 | | 0.83 | | 0.51 | | | |
| Cluster | | | | | | | | | 38.540*** | 0.118 | c1<c2**/ c2<c3***/ c1<c3*** |
| Time | | | | | | | | | 81.131*** | 0.124 | |
| Cluster × time | | | | | | | | | 2.865 n.s. | 0.010 | |
| NOC | | | | | | | | | 80.820*** | 0.123 | |
| NOC × time | | | | | | | | | 2.147 n.s. | 0.004 | |

ES = Effect size; NOC = number of comorbidities.

**Table 4.** ANOVA for BDI and GSI at intake and discharge across the three CTQ clusters

| | F | p | Post hoc (Bonferroni) three CTQ clusters |
|---|---|---|---|
| BDI | | | |
| Intake | 48.887 | 0.000 | c1<c2***/c1<c3***/c2<c3*** |
| Discharge | 29.835 | 0.000 | c1<c2*/c1<c3***/c2<c3*** |
| GSI | | | |
| Intake | 64.006 | 0.000 | c1<c2***/c1<c3***/c2<c3*** |
| Discharge | 42.350 | 0.000 | c1<c2 n.s./c2<c3***/c2<c3*** |

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

To examine differences in general mental distress between the clusters, two separate ANOVAs were conducted for GSI values at intake and discharge. The GSI differed significantly between all three clusters at intake and at discharge. Cluster 1 showed the lowest values, cluster 3 the highest values. The results of the ANOVA are summarized in table 4.

The covariable number of comorbid disorders showed a highly significant main effect ($F = 80.820$, $p = 0.000$), but there was no significant interaction with time ($F = 2.147$, $p = 0.312$).

No interaction effect of time and cluster was found ($F = 2.865$, $p \geq 0.05$). Simple contrasts revealed highly significant differences between all three clusters ($F = 38.540$, $p = 0.000$) at discharge. The results are illustrated in figure 2.

## Discussion

This study aimed at identifying patterns of childhood abuse and neglect based on an inductive approach, and to examine the influence of these patterns on the severity of mental disorders and the course of treatment in inpatient psychotherapy.

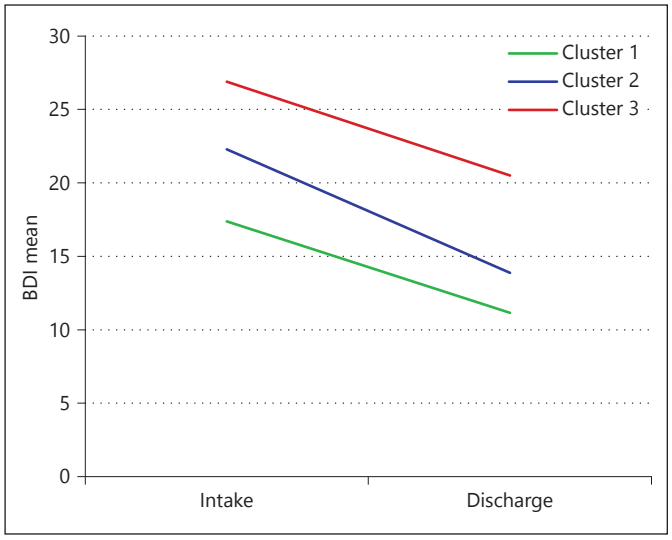


**Fig. 1.** Symptom change according to BDI.

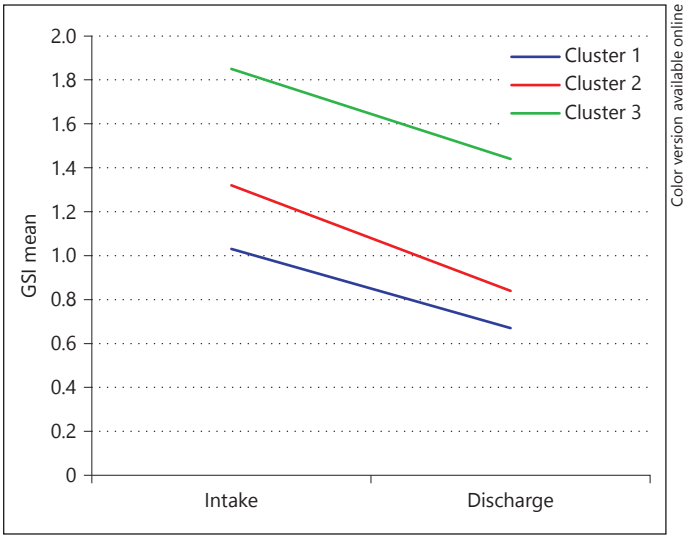


**Fig. 2.** Symptom change according to GSI.

*Patterns of Abuse and Neglect*

To identify patterns of childhood traumatization, a cluster analysis based on an inpatient sample was conducted to group patients based on their similarity in the extent of abuse and neglect they experienced. This inductive approach resulted in three groups characterized by mild traumatization (cluster 1), multiple traumatization without sexual abuse (cluster 2) and multiple traumatization with sexual abuse (cluster 3). Cluster 1 was labelled as 'mild' because the means of the CTQ subscales (except of physical neglect) correspond to the means that were reported for a representative sample of the general German population [49]. Values for the CTQ scale physical neglect were elevated in all three clusters. Differences between the three clusters on the scale physical neglect are statistically significant, but small ($\eta^2 = 0.014$). As reported recently, the physical neglect scale has low internal consistency and cannot be clearly differentiated from the other subscales of the CTQ [49]. Thus, the scale physical neglect should be interpreted with caution. Cluster 2 showed elevated values on the scales emotional abuse and emotional neglect, but rather low values on physical abuse and sexual abuse. In cluster 3, values for emotional neglect and emotional abuse are higher than in the first two clusters. In contrast to the first two clusters, in cluster 3 the values for sexual abuse and physical abuse are high.

The cluster analysis reveals quantitatively and qualitatively different patterns of neglect and abuse: there is a group of patients that was neither emotionally nor physically or sexually maltreated (cluster 1), a group of patients that was emotionally but not physically or sexually maltreated (cluster 2), and finally a group of patients that were physically and sexually maltreated and also experienced severe emotional abuse and neglect (cluster 3).

The results confirm the findings that different forms of childhood abuse and neglect are rather interrelated than independent [13]. In particular, emotional abuse and emotional neglect are highly correlated, as well as physical abuse and sexual abuse. Furthermore, physical abuse and sexual abuse are associated with emotional abuse and emotional neglect.

The ratio between male and female patients in the total sample was 1:2 and is comparable with data reported in psychotherapy treatments [33]. While this ratio holds for cluster 1 and cluster 2, women are 4 times more frequent than men in cluster 3. These results support the findings that women are at a higher risk than men to be a target of sexual abuse [20, 50, 51].

*Severity of Mental Disorders*

The three patterns differed in the severity of the mental disorders and the number of comorbidity at intake. Cluster 1 showed lowest values in symptom severity, cluster 3 showed highest values. While patients in cluster 1 had 1.76 ICD-10 diagnoses on average, patients in cluster 2 had 2 diagnoses and patients in cluster 3 had 3 diagnoses.

The distribution of ICD-10 diagnoses across the three patterns indicates that childhood traumatization is an unspecific risk factor for the development of an affective disorder, since affective disorders were equally prevalent

among all three patterns. In contrast, a combination of other types of neglect and abuse plus sexual abuse seems to be a specific risk factor for the development of a post-traumatic stress disorder or a somatoform disorder, since the portion of these disorders is particularly high in cluster 3.

Our finding that patients with a history of multiple childhood traumatization (with or without sexual abuse) had higher scores in depression and general mental distress is in accordance with previous research results [52–60]. The symptom severity increases linearly from cluster 1 over cluster 2 to cluster 3. That demonstrates that emotional abuse and neglect without physical or sexual abuse have an effect on the severity of the mental disorder. A simple comparison between not maltreated patients and sexually or physically maltreated patients disregards the effects of a possibly common emotional maltreatment. Thus, the findings support the results of recent studies that pointed out the pathogenetic effects of emotional abuse and emotional neglect on mental disorders [23–27]. The results are also in accord with previous findings that emotional abuse and neglect increase the chance for the development of depressive disorders and anxiety disorders [2].

The results show a strong association between the three patterns of childhood abuse and neglect and the number of axis I diagnoses. Since axis II disorders were not assessed in the study, the results do not allow for conclusions on whether personality disorders might be one possible underlying mechanism for this pathogenetic link.

In a number of studies childhood maltreatment was identified as a risk factor for the development of a personality disorder, especially for borderline personality disorder [61–65]. There is evidence that persons with personality disorders show a higher psychiatric comorbidity than persons without a personality disorder [66–68]. Specific patterns of childhood abuse and neglect might be associated with either different personality disorders or one of the three DSM-IV clusters of personality disorders. However, results of previous studies that examined specific links between a particular type of maltreatment and specific personality disorder are inconsistent [64, 69, 70].

*Treatment Outcome*

All three clusters benefited from the treatment to a similar extent. The differences between the three clusters regarding symptom severity were stable from intake to discharge. On average, patients within cluster 3 had higher values in symptom severity at discharge than patients within cluster 1 at intake.

Patients with mild traumatization (cluster 1) started psychotherapy with a mild depression on average and ended the treatment without a clinically relevant depression. Patients with multiple traumatization without sexual abuse (cluster 2) changed on average from a moderate depression to a mild depression. Patients with multiple traumatization including sexual abuse (cluster 3) achieved rather minor treatment outcomes. They were still clinically depressed at the end of treatment even though there was a significant decrease in the depression score in the course of treatment.

The findings are in accord with previous research on the impact of childhood trauma on the course and outcome of psychotherapy treatment [71–79]: patients with a history of sexual maltreatment have a rather poor treatment outcome and still suffer from moderate to severe depression and general symptom distress at discharge.

*Limitations*

There are several limitations of the study. Childhood abuse and neglect usually are assessed retrospectively by interviews or paper-and-pencil questionnaires [80]. In this study, childhood traumatization was also assessed retrospectively. Thus, there might be recall biases like the false memory effect (false-positive) or childhood memories might be blocked because of their traumatic nature [81–83]. However, there is ample evidence on validity of self-reports on childhood traumatization [48, 84, 85].

The representativeness of the results is restricted because of the inpatient psychotherapy setting that is part of the German medical health system. Patients with a history of childhood traumatization in an inpatient setting might suffer from more severe conditions than samples in other treatment settings. It is possible that clinical samples exclude well-adjusted persons with a history of childhood trauma [20]. Furthermore, the results are limited to the two outcome measures BDI and GSI. Fourth, BDI and GSI provide a high portion of the same information, since the correlation in our data is high ($r = 0.756$).

*Implications – Future Directions*

The results have several implications. Further studies are needed to examine the reliability and the validity of the classification that was identified in this study based on an inductive approach, resulting in three different patterns of childhood traumatization.

To examine the reliability of the cluster solution, replications of the cluster analysis are needed for different groups of patients and therapy settings and representative community samples. There is evidence that the three patterns of childhood abuse and neglect can be replicated in

a representative sample of the general population of Germany [86].

Further studies should include the assessment of axis II comorbidity to examine the link between childhood traumatization, personality disorder and severity of mental illness in adulthood.

The clinical benefit of this inductively generated classification should be further examined. If this typological classification proves to be reliable and valid, CTQ cut-off scores for the three patterns could be calculated. Thus the patterns could provide additional information for decisions on treatment indication and treatment assignment.

## Conclusions

The results provide evidence that the severity of childhood traumatization is linked to the severity of mental disorders and also to the treatment outcome in inpatient psychotherapy.

In the study, three different patterns of childhood traumatization (mild traumatization, multiple traumatization without sexual abuse, multiple traumatization with sexual abuse) showed differences in the severity of mental disorders and in the course of treatment within the same therapy setting.

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