

Associations of Symptom Severity of Mentally Ill Parents on Family Functioning and Children's Mental Health

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Abstract

Background: Parental mental illness has a negative impact on children's mental health. Often, the entire family structure suffers from the consequences of parental illness. **Purpose:** For future interventions, it is important to examine the impact of specific factors such as parental symptom severity on children's mental health and family functioning. **Method:** The sample of this study included $N = 203$ parents with mental illness with a total of $N = 309$ children. Parents completed questionnaires on symptom severity. Children's mental health symptoms were rated by parents and children and family functioning was assessed from the children's perspective. **Results:** Mixed linear models showed a significant impact of parental symptom severity on children's mental health from both parents' and children's perspectives. No significant impact of symptom severity on perceived family functioning from the children's perspective was found. **Conclusion:** Results underline the importance of personalized interventions in terms of parental symptom severity to minimize negative outcomes for children and the whole family.

Keywords

Mentally Ill Parents, Symptom Severity, Children's Mental Health, Family Functioning

1. Introduction

The consequences of mental illness impact not only the affected persons themselves, but also the family environment (Pérez et al., 2018). Especially children of mentally ill parents have been studied regarding their risk for psychopathology (Jacobs et al., 2015; Weissman et al., 2016).

Children of families with parents with mental illness also use a broad spectrum of mental health care, school-based support, and youth welfare services even if they are not yet diagnosed as having a mental disorder (Waldmann et al., 2021). Parental mental health problems constitute a significant risk for children's mental health (Plass-Christl et al., 2017). Children of mentally ill parents have a significantly increased risk of developing a mental illness over the course of their childhood or adolescence compared to the general population (Heradstveit et al., 2021; Plass et al., 2016). If a parent suffers from mental illness, the child is two to three times more likely to be mentally ill as well, with the risk elevating to a fivefold when both parents are affected (McLaughlin et al., 2012). Children of mentally ill parents score three to seven times higher on the scales of the "Child Behavior Checklist" (CBCL; Achenbach & Edelbrock, 1991) in comparison to the general public. In addition, prevalence of emotional and behavioral problems ranges around 43% for children with mentally ill parents (Wiegand-Grefe et al., 2019). A review by Sweeney and MacBeth (2016) suggested that paternal depression does negatively impact upon children's development. In a longitudinal study, Axelson and colleagues (2015) illustrate that children of parents with bipolar disorder have an increased risk for the development of a mental illness themselves, particularly affective disorders. A 30-year follow-up-study showed a more than tripled risk for children of depressed parents to suffer from depression compared to other children. These results were present at every point during the study (Weissman et al., 2016). Similar results were found for parents with bipolar disorder, anxiety, schizophrenia as well as obsessive-compulsive disorders (Leijdesdorff et al., 2017). Plass-Christl and colleagues (2017) also examined the consequences of parental mental illness on children in the "Befragung zum seelischen Wohlbefinden und Verhalten" (BELLA-study). The results indicate that children of mentally ill parents report mental health issues more frequently than children of healthy parents. There were also significant associations found between the symptomatology and the female gender, a higher age of the mother as well as a younger age of the father. In their analysis, the authors show additional components of the family structure that can have an impact on the mental wellbeing of the children.

The symptom severity of parental symptomatology is another factor whose impact on children's mental health is also discussed in literature. The results of Bartsch and colleagues (2022) illustrate a significant relationship between parental borderline symptom severity and child psychopathology. In another study, the severity of a previous parental depressive episode, assessed with the Global Assessment of Functioning scale (GAF), predicted the child's depression symp-

toms (Mars et al., 2012). In an Australian birth cohort study by Hammen and Brennan (2003), depressed mothers and their children were followed over a period of 15 years. Results showed a predictive relationship between the severity of maternal and child depression. Sell and colleagues (2021c) investigated the role of several parental coping strategies and their relation to child psychological symptoms. A depressed parental processing style was related to increased internalizing problems in children. Furthermore, higher parental psychological symptom burden was associated with more mental health symptoms and higher risk of mental health disorders in children. In addition, Wiegand-Grefe and colleagues (2009) were able to identify a relationship between the perceived mental impairment of the parents and the mental problems of their children across several disorders. In contrast, such results could not be replicated in the study by Wiegand-Grefe and colleagues (2011). The severity of the mentally ill parents was assessed by an observer-rated scale and children's mental health was assessed via the CBCL. One reason for the different results could be methodological deficiencies (e.g. small samples, outdated methodological standards).

Often the whole family structure suffers from the consequences of parental mental illness (Pérez et al., 2018). Therefore, it is also important to consider family functioning in research. Family functioning describes various processes within a family, including structural and social characteristics. It includes family interactions and relationships, particularly levels of conflict and cohesion, adaptability, organization, and quality of communication. Healthy family functioning occurs with clear communication, well-defined roles, cohesion, and good affect regulation (Lewandowski et al., 2010). Positive aspects include a secure attachment of the child to its parents, increased maternal sensitivity and parental commitment (El-Sheikh & Kelly, 2017). On the other hand, poor family functioning is associated with high levels of conflict, disorganised relationships and poor emotional and behavioral control (Lewandowski et al., 2010). Cierpka and Frevert (1995) describe family functioning using seven dimensions to define basic functions of a family - Task Accomplishment, Role Behavior, Communication, Emotionality, Affectivity of Relations, Control as well as Values and Norms. Some studies have been able to identify links between family functioning and mentally ill parents. In the study by Wiegand-Grefe and colleagues (2019), more than one third of the mentally ill parents described their families as dysfunctional. Higher levels of family dysfunctionality were associated with mental health problems in children of mentally ill parents. Family dysfunctionality was measured with the General Family Questionnaire (FB-A, Allgemeiner Familienbogen; Cierpka & Frevert, 1995). In a study from Sell and colleagues (2021b) families with a mentally ill parent displayed higher family dysfunctioning compared to a normative sample. Sell and colleagues (2021b) also compared ratings of family functioning among family members. Mentally ill parents reported higher impairment on most dimensions of family functioning compared to their children. In a cross-sectional sample Sell and colleagues (2021a) investigated whether family functioning and

social support would be associated with children's mental health in families affected by a parental mental disorder. The results showed significant associations between family functioning and internalizing and externalizing problems from the patients' and children's perspectives. Higher family dysfunction was related to higher levels of child psychopathology. Other studies show evidence of correlations between specific parental diagnoses and functionality within a family. A review done by [Eyden and colleagues \(2016\)](#) states that mothers suffering from borderline personality disorder often show maladaptive behavior towards their children including insensitive, overly protective and hostile interactions. This has significant consequences for everyday life in the family. Associations between lower family functioning in parental affective disorders ([Freed et al., 2015](#)) and anxiety disorders ([Wang et al., 2016](#)) have also been pointed out repeatedly. In the study by [Koutra and colleagues \(2015\)](#), the symptom severity of a mental illness showed a high significant impact on the subjective and objective perception of family cohesion. With more severe symptoms, a worse family cohesion was apparent. The sample consisted of adults diagnosed with schizophrenia or bipolar disorder.

In the present study, the impact of parental symptom severity on family functioning across several disorders will be examined. Family functioning will be assessed from the children's perspective and the impact of symptom severity on the children's mental health problems will also be included. Children's mental health will be assessed from the perspective of the mentally ill parent as well as the child itself. It is of great importance to identify risk factors for mentally ill parents and their children, such as the symptom severity of a parental illness, especially for early diagnosis, the need for treatment and the adaptation of interventions (e.g. personalized psychotherapy). The following research questions can be derived from the current state of research: Does the symptom severity of the parental illness have a significant influence on the children's mental health? Does the symptom severity of the parental illness have a significant impact on family functioning from children's perspective?

2. Method

2.1. Sample

This study is part of the project "Children of Mentally Ill Parents" (CHIMPs) of the Federal Ministry of Education and Research (BMBF) that is a multicenter randomized controlled trial ([Wiegand-Grefe et al., 2021](#)). The trial was conducted at seven clinical centers located in Germany and Switzerland. The study was approved by the Ethics Committee of the Chamber of Physicians in Hamburg, Germany.

The sample consists of $N = 216$ families with a mentally ill parent and their children. For study participation, e.g. inclusion criteria, one parent in the family had to meet the diagnostic criteria of a mental disorder according to International Statistical Classification of Diseases and Related health Problems (ICD-10; [WHO, 2019](#)) rated by an attending clinician. Further, consent to participate in

the study and sufficient knowledge of the German language by parents and children were required. Acute severe parental psychiatric symptoms requiring inpatient treatment were exclusion criteria. For the current analyses, children were included if they were in the age range of 4 - 18 years old due to the predefined age ranges of the administered questionnaires.

In addition, some of the children and adolescents were already 19 years old at the time of the survey and therefore also not included in this study. Subjects were excluded from the study if more than 50% of data was missing for the analyses. The final sample consisted of 203 mentally ill parents and 309 children. On average, parents were $M = 40.51$ ($SD = 6.93$) years old, ranging from 23 to 57 years. Among the mentally ill parents, 148 were mothers (72.91%) and 51 fathers (25.12%); no information on gender was available for 4 (1.97%) subjects. The age of the children ranged from 4 to 18 years, with a mean of $M = 10.10$ ($SD = 4.02$) years. The children's sample consisted of 158 girls (51.13%) and 143 boys (46.28%), no information on gender was available for 8 (2.59%) subjects. **Table 1** shows the distribution of diagnoses among the mentally ill parents according to the ICD-10. 61.08% of parents suffered from comorbid disorders. The most common diagnoses among parents were affective disorders with a percentage of 79.31%.

2.2. Measurements

2.2.1. Brief Symptom Inventory (BSI)

The "Brief Symptom Inventory" (BSI; Franke, 2000) is a short form of the

Table 1. Psychiatric disorders of mentally ill parents (ICD 10).

Diagnosis (ICD-10)	<i>n</i> ^a	%
F10 - F19	17	8.37
F20 - F29	10	4.93
F30 - F39	161	79.31
F40 - F48	66	32.51
F50 - F59	11	5.42
F60 - F69	52	25.62
F70 - F79	1	.49
F80 - F89	1	.49
F90 - F99	8	3.94

N = 203 mentally ill parents; ^aNumber of diagnoses with consideration of comorbid diseases; rated by attending clinician; F10 - F19 = Mental and behavioral disorders due to the use of psychoactive substances; F20 - F29 = Schizophrenia, schizotypal and delusional disorders; F30 - F39 = Affective disorders; F40 - F48 = Neurotic, stress-related and somatoform disorders; F50 - F59 = Behavioral syndromes associated with physiological disturbances and physical factors; F60 - F69 = Disorders of personality and behavior in adult persons; F70 - F79 = Intellectual disabilities; F80 - F89 = Pervasive and specific developmental disorders; F90 - F98 = Behavioral and emotional disorders with onset usually occurring in childhood and adolescence.

SCL-90-R (Derogatis, 1992). It is a self-report measurement to assess psychological strain and consists of nine scales named “somatization”, “obsessive-compulsive”, “interpersonal sensitivity”, “depression”, “anxiety”, “hostility”, “phobic anxiety”, “paranoid ideation” and “psychoticism”. In total, the BSI includes 53 items to assess psychological strain which subjects answer using a five-tier Likert-scale ranging from “strong disagree” (0) to “strongly agree” (4). Franke (2000) reported good reliability and validity. Internal consistencies of the scales range from $\alpha = .71$ to $.85$. Regarding the present sample, internal consistencies were also ranging between acceptable ($\alpha = .71$) and good ($\alpha = .9$) values. For a total score, the “Global Severity Index” (GSI) can be used. It represents the most sensitive indicator of psychological strain (Franke, 2000). To calculate this index, sum scores of all scales are determined and then divided by the number of answered items (Franke, 2000).

2.2.2. General Family Questionnaire (FB-A)

The “General Family Questionnaire” (“Allgemeiner Familienbogen”, FB-A; Cierpka & Frevert, 1995), is a German self-report questionnaire to estimate the strengths and weaknesses of a family. It is suitable for adults and children who are 12 years and up. The FB-A consists of 7 standard scales which are based on a family process model done by Steinhauer and colleagues (1984). The names of the subscales are as follows: “Task Accomplishment”, “Role Behavior”, “Communication”, “Emotionality”, “Affectivity of Relations”, “Control” as well as “Values and Norms”. The 40 items of the FB-A can be answered on a four-point rating scale ranging from “completely true” to “not true at all”. High scores indicate dysfunctional aspects of families. To calculate a total score, sum scores of all seven standard scales are determined. The FB-A has good convergent validity and very good content validity (Benninghoven et al., 2008). The reliability of six of the standard scales lies between a Cronbach’s α of $.51$ to $.75$ and can thus be rated as acceptable for the most part. Only the subscale “values and norms” shows a lower reliability value ($\alpha = .45$). In the present sample, the scales exhibit questionable to acceptable internal consistencies ($\alpha = .63$ to $\alpha = .722$).

2.2.3. Child Behavior Checklist (CBCL)

The “Child Behavior Checklist” (CBCL; Achenbach & Edelbrock, 1991) is a parent-report measure of psychological abnormalities in children and adolescents. The questionnaire consists of two parts with the items of the first part being summarized into three competence scales (“activity”, “social competence” and “school”). The second part of the CBCL includes eight problem scales named “Aggressive Behavior”, “Anxious/Depressed”, “Attention Problems”, “Rule-Breaking Behavior”, “Somatic Complaints”, “Social Problems”, “Thought Problems”, “Withdrawn/Depressed”. These scales can be summarized into three overarching scales which describe externalizing, internalizing and mixed problems. Items can be answered on a three-tier scale with the options “disagree” (0), “sometimes agree” (1) and “fully or mostly agree” (2). A total score to indicate psychological ab-

normalities can be formed by summarizing the ratings from all of the 118 problem-scale items (items 2 and 4 were excluded from this study) (Achenbach & Edelbrock, 1991). The German version shows a good factorial and convergent validity (Klasen et al., 2000). Most of the problem scales have internal consistencies of $\alpha > .7$ (Esser et al., 2018). The formation of the scales was also confirmed by factor analyses in a German-speaking clinical sample (Achenbach & Edelbrock, 1991). In the present sample the scales showed predominantly acceptable and good internal consistencies ($\alpha > .7$) as well.

2.2.4. Youth Self Report (YSR)

The “Youth Self Report” (Achenbach & Edelbrock, 1991) or “Fragebogen für Jugendliche” (YSR) stems from the “Child Behavior Checklist” (CBCL) and is a self report for children and adolescents aged 11 to 18 years. It addresses problems that are also assessed by the CBCL and consists of 119 items which can be answered on a three-tier Likert-scale (“disagree” (0), “sometimes agree” (1) and “strongly or mostly agree” (2)). A total score for problematic behavior is determined by creating a sum score from all items. The YSR has satisfactory validity and reliability (Döpfner et al., 1995). Internal consistencies range mostly from sufficient to good ($r > .7$). Those three scales thus shouldn’t be used for an individual’s diagnosis (Achenbach & Edelbrock, 1991; Holtmann et al., 2020). In the present sample, most scales had acceptable internal consistencies ($\alpha > .7$).

2.3. Study Design

The CHIMPs project collected data at four different measurement time points. In the present study, the baseline measurement was used, which was collected before randomisation and implementation of the intervention. To investigate the research question of the present work, parental symptom severity was assessed with the Brief Symptom Inventory (BSI; Franke, 2000). For family functioning and relationships from the children’s perspective, the “General Family Questionnaire” (FB-A; Cierpka & Frevert, 1995) was used. The children’s psychological symptoms from the parents’ perspective were assessed by the “Child Behavior Checklist” (CBCL; Achenbach & Edelbrock, 1991) and the “Youth Self Report” (YSR; Achenbach & Edelbrock, 1991) was used for self-report. All scales that we used for statistical analyses are listed in **Table 2**. In addition, demographic data of parents and children were collected. ICD-10 diagnoses were assigned by psychiatrists and psychotherapists.

Table 2. Scales used in the statistical analyses.

Questionnaires	Scales
Brief Symptom Inventory	Global Severity Index
General Family Questionnaire	Total score
Child Behavior Checklist	Total score
Youth Self Report	Total score

2.4. Statistical Analyses

Due to the hierarchic structure of the data (Intraclass Correlation Coefficient; $ICC \geq .10$) linear models (multilevel analysis) were used to examine the hypothesis. The models enable the simultaneous analysis of individual units and their associated groups. Furthermore, it takes into account associations within families, and allows the identification of differences between children as well as between children in the same family (Field, 2009). Three random-intercept-models were calculated with each a different criterion to analyze. The criteria consisted of the children's total FB-A score, the total CBCL score and the total YSR score. For each model on level one (children level, L1), age and sex of the children were included as predictors. On level two (family level, L2), the parental psychiatric symptomatology (BSI GSI) as well as their age and sex were included as predictors. Prior to the analysis, the metric level-2-predictor BSI GSI was centered using the grand mean centering to enable a correct interpretation (Field, 2009). Firstly, a null model without any predictors was calculated to analyze the expected influence of being in a group or family. Afterwards, the grand mean centered level-2-predictor of the parents (BSI GSI) was added. Lastly, a final model including the control variables age and gender of the parents (level 2) as well as the children (level 1) was conducted. The condition of a normal distribution of dependent variables is fulfilled which allows using linear mixed models. The level of significance of statistic analyses was set to 5% and all analyses were calculated using the software SPSS (Version 25.0. IBM, Chicago, IL, USA).

3. Results

3.1. Descriptive Analyses

The mean value of parental symptom severity was $M = 1.34$ ($SD = .69$; see **Table 3**) as assessed via the GSI BSI. Overall, 81.77% of the mentally ill parents in this sample were rated as being psychologically abnormal by means of the GSI (Franke, 2000). **Table 3** also shows family functioning as reported by the

Table 3. Descriptive analyses of mentally ill parents and their children (4 - 18 years).

	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
Parents					
BSI GSI ^b	199	0.02	3.13	1.34	0.69
Children					
YSR-T ^a	138	5	105	46.14	21.03
CBCL-T ^b	296	0	114	37.73	23.95
FB-A T ^a	138	1	77	30.71	15.11

$N = 203$ mentally ill parents, $N = 308$ children, Raw values. BSI GSI: Brief Symptom Inventory General Severity Index, YSR-T: Youth Self Report total score, CBCL-T: Child Behavior Checklist (4 - 18) total score, FB-A T: General Family Questionnaire total score; T = total score. ^aValues based on children's self-report, ^bValues based on parent's reports.

children (FB-A), the mental wellbeing of the children assessed via self-report on the YSR and via parent report on the CBCL. 42.22% of children in this sample exhibited CBCL total scores that could be assessed as clinically relevant. In contrast, only 35.5% had YSR total scores above the threshold for clinical relevance (Achenbach & Edelbrock, 1991). Regarding the child's perspective, FB-A scores over 40 can indicate impaired family functioning (Cierpka & Frevert, 1995) and this was evident with 28.26% of children in this sample. Because of the young age of many children, YSR and FB-A scores were only accessible for 138 subjects.

3.2. Parent's Symptom Severity (BSI GSI) and Psychological Symptoms of Their Children (CBCL Total Score)

The final model using the CBCL total score as a criterion and including all predictors (level 1: age and gender of the children; level 2: BSI GSI, age & gender of the parents) accounted for 40% of the variance ($ICC = .40$; see **Table 3**). The model improved consistently until the last model (χ^2 (df) = 21.23 (4), $p < .001$). The variables BSI GSI ($b = 13.28$, $p < .001$) and parental age ($b = -.69$, $p < .01$) showed a significant predicting impact for parental symptom severity (BSI GSI) in this model. The results are shown in **Table 4**.

3.3. Parent's Symptom Severity (BSI GSI) and Psychological Symptoms of Their Children (YSR Total Score)

Table 5 contains all models with the YSR total score as a criterion. The final model with all included predictors (level 1: age & gender of the children; level 2: BSI GSI, age & gender of the parents) showed no significant improvement compared to the reduced model including only the BSI GSI as a predictor (χ^2 (df) = 8.11 (4), $p = .088$). The reduced model demonstrated a significant effect of the BSI GSI ($b = 6.84$, $p < .01$) on the YSR total score. The gender of the children had no significant impact on the YSR total score in the final model ($b = -7.92$, $p < .05$).

3.4. Parent's Symptom Severity (BSI GSI) and Family Functioning from Children's Perspective (FB-A Total Score)

Regarding the FB-A total score, the final model including all predictors (level 1: children's age & gender; level 2: BSI GSI, parent's age & gender) showed no significant improvement (χ^2 (df) = 4.79 (4), $p = .309$). The reduced model using the BSI GSI as a predictor accounted for 28% ($ICC = 0.28$) of the outcome variance. However, the BSI GSI did not reach significance ($b = 1.52$, $p = .427$) and thus has no significant impact on the FB-A total score rated by the children. Results are presented in **Table 6**.

4. Discussion

The goal of this study was to examine associations between symptom severity of mentally ill parents and the psychological symptoms of their children at baseline.

Table 4. Parental symptom severity as a predictor of children's mental health (CBCL)

Criterion	Model 0		Model 1		Model 2	
	CBCL-T	CI-95%	CBCL-T	CI-95%	CBCL-T	CI-95%
Fixed effects						
Intercepts	38.56***	33.32, 41.60	38.25***	35.38; 41.12	58.95***	41.41; 76.48
Lv 1 Children						
Age (in years)					.59	-.09; 1.27
Sex (0 = male, 1 = female)					4.18	-.65; 9.01
Lv 2 Parents						
Symptom severity (BSI GSI)			13.75***	9.59; 17.91	13.28***	9.20; 17.36
Age (in years)					-.69**	-1.17; -.21
Sex (0 = male, 1 = female)					-2.03	-8.87; 4.81
Random effects						
Lv 1 children	299.28***	225.35; 397.48	286.83***	219.00; 375.75	283.47***	215.71; 372.51
Lv 2 parents	282.51***	185.69; 429.82	210.33***	133.02; 332.55	190.23***	116.15; 311.53
ICC	.49		.42		.40	
2-log-Likelihood	2696.20		2657.05		2635.92	
χ^2/df			39.16/1		21.23/4	
<i>p</i>			<.001		<.001	
BIC	2713.28		2679.81		2681.42	

Linear Mixed Model.; N = 296 children of mentally ill parents; BSI GSI: Brief Symptom Inventory General Severity Index, CBCL-T: Child Behavior Checklist (4 - 18) total score; T = total score. CI: Confidence interval, ICC: Intraclass Correlation Coefficient, BIC: Bayesian Information Criterion. * < .05, ** < .01, *** < .001.

Table 5. Parental symptom severity as a predictor of children's mental health (YSR).

Criterion	Model 0		Model 1		Model 2	
	YSR-T	CI-95%	YSR-T	CI-95%	YSR-T	CI-95%
Fixed effects						
Intercepts	46.36***	42.49; 50.23	46.80***	43.05; 50.56	45.99**	16.94; 75.03
Lv 1 Children						
Age (in years)					.433	-.97; 1.83
Sex (0 = male, 1 = female)					-7.92*	-14.95; -.90
Lv 2 Parents						
Symptom severity (BSI GSI)			6.84**	1.72; 11.96	5.89*	.91; 10.89
Age (in years)					-.01	-.70; .69
Sex (0 = male, 1 = female)					-6.23	-15.11; 2.66
Random effects						
Lv 1 children	275.92***	181.53; 419.40	301.36***	194.08; 467.95	293.44***	190.81; 450.36

Continued

Lv 2 parents	162.96*	73.07; 363.43	115.18	35.20; 376.86	97.15	26.78; 352.43
ICC	.37		.28		.25	
2-log-Likelihood	1225.01		1185.40		1177.29	
χ^2/df			39.62/1		8.11/4	
<i>p</i>			< .001		.088	
BIC	1239.79		1204.99		1216.47	

Linear Mixed Model.; N = 296 children of mentally ill parents; BSI GSI: Brief Symptom Inventory General Severity Index, YSR-T: Youth Self Report total score; T = total score. CI: Confidence interval, ICC: Intraclass Correlation Coefficient, BIC: Bayesian Information Criterion. * < .05, ** < .01, *** < .001.

Table 6. Parental symptom severity as a predictor of family functioning

Criterion	Model 0		Model 1		Model 2	
	FB-A T	CI-95%	FB-A T	CI-95%	FB-A T	CI-95%
Fixed Effects						
Intercepts	30.62***	27.81; 33.44	30.99***	28.22; 33.76	21.83*	.11; 43.56
Lv 1 Children						
Age (in years)					.79	-.22; 1.80
Sex (0 = male, 1 = female)					-2.86	-7.90;
Lv 2 Parents						
Symptom severity (BSI GSI)			1.52	-2.26; 5.30	1.64	-2.10; 5.37
Age (in years)					-.02	-.53; .50
Sex (0 = male, 1 = female)					1.86	-4.80; 8.52
Random effects						
Lv 1 children	115.42***	74.49; 178.84	127.99***	79.56; 205.90	127.79***	79.07; 206.55
Lv 2 parents	108.52***	58.78; 200.36	88.67*	39.01; 201.56	79.84*	32.59; 195.58
ICC	.47		.41		.38	
2-log-Likelihood	1119.53		1085.89		1081.10	
χ^2/df			33.63/1		4.79/4	
<i>p</i>			<.001		.309	
BIC	1134.29		1105.45		1120.22	

Linear Mixed Model.; N = 296 children of mentally ill parents; BSI GSI: Brief Symptom Inventory General Severity Index, FB-A T: Allgemeiner Familienbogen total score; T = total score. CI: Confidence interval, ICC: Intraclass Correlation Coefficient, BIC: Bayesian Information Criterion. * < .05, ** < .01, *** < .001.

In addition, the relationship between parental symptom severity and family functioning from the children's perspective was analyzed. A significant impact of the parental symptom severity on the psychological symptoms of the children was found, whereas symptom severity and family functioning showed no signif-

icant association.

The results of the first research question show that parental symptom severity significantly predicts the mental symptomatology of the children. The GSI BSI represented a significant predictor for the CBCL total score as well as the YSR total score. The more severely the parents were affected by their mental symptomatology, the higher the mental symptomatology of the children was rated. The mean CBCL and YSR scores in this study both lie in a transitional range to psychopathology (Achenbach & Edelbrock, 1991). Other works suggest that mothers estimate the severity of mental illness via the CBCL higher than their children do themselves via the YSR (Berg-Nielsen & Dahl, 2003). This could explain why the parental symptom severity impacts both the CBCL as well as the YSR total scores. The results of the first research question are in line with the majority of previous studies which investigated mostly specific mental disorders (Hammen & Brennan, 2003; Mars et al., 2012). A large proportion of the mentally ill parents (78%) in this sample suffered from affective disorders. The severity of affective disorders has been associated with mental problems in children by Hammen and Brennan (2003) and Mars and colleagues (2012). In the study done by Wiegand-Grefe and colleagues (2009), significant associations between subjective suffering of mentally ill parents and psychological symptoms of their children were also found. The more the parents were suffering from their disorders, the more they reported behavioral problems of their children. For the parental symptom severity, a self-report via a short form of the SCL-90-R was used and for the children's symptoms the CBCL was used. This operationalization can therefore be compared to the present study, especially since the BSI also represents a short form of the SCL-90-R. In 2011, Wiegand-Grefe and colleagues were not able to find an association between the severity of the parental mental illness and the mental disorders of their children. The differences in the results may be caused by the different operationalizations of symptom severity which in this case consisted of a doctor's verdict on an item of the CGI (NIMH, 1996). In the present study, however, a self-report questionnaire was used to examine the mentally ill parents. Differences between self-report and external assessments of symptom severity have already been shown in other studies (Piersma & Boes, 1995). Furthermore, the present study also used a self-report for the children where they described their symptoms via the YSR. This is an important new aspect and hasn't been examined in association with parental symptom severity until now.

The linear regression model of the first research question using the CBCL revealed the age of the parents as a significant predictor as well. A younger age of the parents was correlated with higher scores on the CBCL. The majority of the sample consisted of mothers (73%) and in previous studies a younger maternal age was associated with less symptomatology in the children (Plass et al., 2016). Overall, results of studies regarding parental age and mental wellbeing of the children are mainly heterogeneous (McGrath et al., 2014). The linear regression model using the YSR as a criterion revealed the age of the children as a signifi-

cant factor. Regarding the YSR total score, boys scored considerably lower compared to girls in this sample. Former studies are in line with this result, showing more psychological symptoms in girls than in boys (Plass et al., 2016).

The results of the second research question showed no significant association between the BSI GSI and family functioning assessed by the FB-A. The age of the parents and children as well as their gender represented no significant predictors. These results suggest that parental symptom severity has no significant impact on child reports of family functioning across various disorders. The mean FB-A score according to the children in this sample lies at a transitioning area ranging from good to impaired family functioning. Less than a third of the sample described their family as dysfunctional which could explain the missing impact of family functioning as seen by the children. A number of studies have associated parental mental illness with reduced family functioning. The results show a negative impact of affective disorders (Letourneau et al., 2013) as well as other specific disorders (Wang et al., 2016) on family functioning. In addition, symptom severity of mentally ill parents was already associated with impaired family functioning. In a sample of schizophrenic and bipolar patients the symptom severity was an important factor influencing subjective and objective measures of family cohesion (Koutra et al., 2015). The present study only included the FB-A as a measurement of the children's perspective while Koutra and colleagues (2015) questioned exclusively adult patients on family cohesion. Another study in the CHIMPS-project done by Sell and colleagues (2021b) revealed a significant difference between ratings of family functioning done by parents and their children. Mentally ill parents reported higher impairment on most dimensions of family functioning in the FB-A than their children which in the case of the present study could affect the results. The study of Sell and colleagues (2021b) showed also low to moderate correlations between family functioning ratings of family members and clinicians.

This study contains several limitations. Firstly, a cross-sectional study design was conducted which only displays the current symptomatology of children and their parents. Thus, developments in symptom severity or perception of family functioning are not visible and causal associations cannot be shown. Also, controlling for diagnoses of parents and children is necessary in consideration of previous research (Letourneau et al., 2013; Wang et al., 2016). This and other possible influencing factors, such as socioeconomic status (Otto et al., 2017) were not taken into account in this study. Lastly, it would be interesting to examine family functioning described by the parents and via clinician rating (Sell et al., 2021a) and assess symptom severity with external ratings from trained professionals (Wiegand-Grefe et al., 2011).

The results of the present study show important implications for clinical practice. Particularly the symptom severity as described by the parents is shown to be a relevant factor in preventing their children's mental disorders. In the past, prevention programs for mentally ill parents and children already showed positive effects (Reupert et al., 2013, Van Santvoort et al., 2013). The results of this

study suggest that parents with severe mental disorders need specific interventions. Personalized psychotherapy including diagnostic screening, careful prognostic assessment as well as dynamic treatment adjustment over the course of the therapy (Lutz et al., 2019) seem to be especially important. An example of such an intervention would be the Mentalisation-Based Parent, Infant and Toddler Therapy of the University Hospital Heidelberg (Bark et al., 2016). Depending on indication and structural level of the parents, single and group therapy session are conducted, and an individual treatment focus is established. The CHIMPS-project also features personalized interventions for families which target family relationships, dynamics, social and professional support as well as strategies to cope with the respective disorder.

5. Conclusion

In conclusion, the results of the present study suggest that parental mental illness has a significant impact on the mental wellbeing of children. With reports of more severe symptomatology, children show more psychological symptoms as well. This impact on children was shown in child and parent reports, respectively. Future studies should include a longitudinal design and examine more perspectives of family functioning and symptom severity. This study shows the relevance of personalized interventions for parents and families depending on parental symptom severity.

Institutional Review Board Statement

The project involving human participants was reviewed and approved by the Ethics Committee of the Medical Association Hamburg as well as by the Ethics Committees of all participating study sites (approval code: PV4744 and approval date: 05.08.2014). The human data were performed in accordance with the Declaration of Helsinki.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Achenbach, T. M., & Edelbrock, C. (1991). *Manual for Child Behavior Checklist 4-18, 1991 Profile*. Department of Psychiatry, University of Vermont.

- Axelson, D., Goldstein, B., Goldstein, T., Monk, K., Yu, H., Hickey, M. B. et al. (2015). Diagnostic Precursors to Bipolar Disorder in Offspring of Parents with Bipolar Disorder: A Longitudinal Study. *American Journal of Psychiatry*, *172*, 638-646. <https://doi.org/10.1176/appi.ajp.2014.14010035>
- Bark, C., Taubner, S., & Georg, A. (2016). Mentalisierungs-Basierte Eltern-Säuglings- und-Kleinkind-Therapie. *Familiendynamik*, *41*, 312-321. <https://doi.org/10.21706/FD-41-4-312>
- Bartsch, D. R., Roberts, R., & Proeve, M. (2022). Relationships between Parental Borderline Symptom Severity, Empathy, Parenting Styles and Child Psychopathology. *Clinical Psychologist*, *26*, 211-221. <https://doi.org/10.1080/13284207.2022.2031947>
- Benninghoven, D., Cierpka, M., & Thomas, V. (2008). Überblick Über Familiendiagnostische Fragebogeninventare. In M. Cierpka (Ed.), *Handbuch der Familiendiagnostik* (pp. 427-446). Springer. https://doi.org/10.1007/978-3-540-78475-3_24
- Berg-Nielsen, T. S., Vika, A., & Dahl, A. A. (2003). When Adolescents Disagree with Their Mothers: CBCL-YSR Discrepancies Related to Maternal Depression and Adolescent Self-Esteem. *Child: Care, Health and Development*, *29*, 207-213. <https://doi.org/10.1046/j.1365-2214.2003.00332.x>
- Cierpka, M., & Frevert, G. (1995). *Die Familienbogen. Ein Inventar zur Einschätzung von Familienfunktionen*. Hogrefe.
- Derogatis, L. R. (1992). *SCL-90-R: Administration, Scoring & Procedures Manual-II for the (Revised) Version and Other Instruments of the Psychopathology Rating Scale Series* (pp. 1-16). Clinical Psychometric Research.
- Döpfner, M., Berner, W., & Lehmkuhl, G. (1995). Reliability and Factorial Validity of the Youth Self-Report of the Child Behavior Checklist in a Clinical Sample. *Diagnostica*, *41*, 221-244.
- El-Sheikh, M., & Kelly, R. J. (2017). Family Functioning and Children's Sleep. *Child Development Perspectives*, *11*, 264-269. <https://doi.org/10.1111/cdep.12243>
- Esser, G., Hänsch-Oelgart, S., & Schmitz, J. (2018). TBS-TK-Rezension. *Psychologische Rundschau*, *69*, 144-146. <https://doi.org/10.1026/0033-3042/a000394>
- Eyden, J., Winsper, C., Wolke, D., Broome, M. R., & MacCallum, F. (2016). A Systematic Review of the Parenting and Outcomes Experienced by Offspring of Mothers with Borderline Personality Pathology: Potential Mechanisms and Clinical Implications. *Clinical Psychology Review*, *47*, 85-105. <https://doi.org/10.1016/j.cpr.2016.04.002>
- Field, A. (2009). *Discovering Statistics Using IBM SPSS Statistics* (Band 3). SAGE.
- Franke, G. H. (2000). *Brief Symptom Inventory (BSI) von LR Derogatis: (Kurzform der SCL-90-R)*. Beltz Test.
- Freed, R. D., Tompson, M. C., Wang, C. H., Otto, M. W., Hirshfeld-Becker, D. R., Nierenberg, A. A., & Henin, A. (2015). Family Functioning in the Context of Parental Bipolar Disorder: Associations with Offspring Age, Sex, and Psychopathology. *Journal of Family Psychology*, *29*, 108-118. <https://doi.org/10.1037/fam0000048>
- Hammen, C., & Brennan, P. A. (2003). Severity, Chronicity, and Timing of Maternal Depression and Risk for Adolescent Offspring Diagnoses in a Community Sample. *Archives of General Psychiatry*, *60*, 253-258. <https://doi.org/10.1001/archpsyc.60.3.253>
- Heradstveit, O., Haugland, B. S. M., Nilsen, S. A., Bøe, T., Sivertsen, B., & Hysing, M. (2021). Parental Mental Illness as a Risk Factor for Adolescent Psychiatric Disorders: A Registry-Based Study of Specialized Child and Adolescent Health Services. *Child & Youth Services*. <https://doi.org/10.1080/0145935X.2021.1997584>
- Holtmann, S. C., Kranert, H.-W., & Stein, R. (2020). Der Einsatz des Youth Self Report

- (YSR/11-18) bei Heranwachsenden. Eine faktorenanalytische Betrachtung im Kontext der Beruflichen Bildung. *Empirische Sonderpädagogik*, *12*, 3-26.
- Jacobs, R. H., Talati, A., Wickramaratne, P., & Warner, V. (2015). The Influence of Paternal and Maternal Major Depressive Disorder on Offspring Psychiatric Disorders. *Journal of Child and Family Studies*, *24*, 2345-2351. <https://doi.org/10.1007/s10826-014-0037-y>
- Klasen, H., Woerner, W., Wolke, D., Meyer, R., Overmeyer, S., Kaschnitz, W., Rothenberger, A., & Goodman, R. (2000). Comparing the German Versions of the Strengths and Difficulties Questionnaire (SDQ-Deu) and the Child Behavior Checklist. *European Child & Adolescent Psychiatry*, *9*, 271-276. <https://doi.org/10.1007/s007870070030>
- Koutra, K., Triliva, S., Roumeliotaki, T., Basta, M., Simos, P., Lionis, C., & Vgontzas, A. N. (2015). Impaired Family Functioning in Psychosis and Its Relevance to Relapse: A Two-Year Follow-up Study. *Comprehensive Psychiatry*, *62*, 1-12. <https://doi.org/10.1016/j.comppsy.2015.06.006>
- Leijdesdorff, S., van Doesum, K., Popma, A., Klaassen, R., & van Amelsvoort, T. (2017). Prevalence of Psychopathology in Children of Parents with Mental Illness and/or Addiction: An up to Date Narrative Review. *Current Opinion in Psychiatry*, *30*, 312-317. <https://doi.org/10.1097/YCO.0000000000000341>
- Letourneau, N. L., Tramonte, L., & Willms, J. D. (2013). Maternal Depression, Family Functioning and Children's Longitudinal Development. *Journal of Pediatric Nursing*, *28*, 223-234. <https://doi.org/10.1016/j.pedn.2012.07.014>
- Lewandowski, A. S., Palermo, T. M., Stinson, J., Handley, S., & Chambers, C. T. (2010). Systematic Review of Family Functioning in Families of Children and Adolescents with Chronic Pain. *The Journal of Pain*, *11*, 1027-1038. <https://doi.org/10.1016/j.jpain.2010.04.005>
- Lutz, W., Clausen, S. A., & Deisenhofer, A.-K. (2019). Perspektiven Einer Evidenzbasierten und Personalisierten Psychotherapie. *Zeitschrift für Klinische Psychologie und Psychotherapie*, *48*, 79-89. <https://doi.org/10.1026/1616-3443/a000518>
- Mars, B., Collishaw, S., Smith, D., Thapar, A., Potter, R., Sellers, R., Harold, G. T., Craddock, N., Rice, F., & Thapar, A. (2012). Offspring of Parents with Recurrent Depression: Which Features of Parent Depression Index Risk for Offspring Psychopathology? *Journal of Affective Disorders*, *136*, 44-53. <https://doi.org/10.1016/j.jad.2011.09.002>
- McGrath, J. J., Petersen, L., Agerbo, E., Mors, O., Mortensen, P. B., & Pedersen, C. B. (2014). A Comprehensive Assessment of Parental Age and Psychiatric Disorders. *JAMA Psychiatry*, *71*, 301-309. <https://doi.org/10.1001/jamapsychiatry.2013.4081>
- McLaughlin, K. A., Gadermann, A. M., Hwang, I., Sampson, N. A., Al-Hamzawi, A., Andrade, L. H., Angermeyer, M. C., Benjet, C., Bromet, E. J., & Bruffaerts, R. (2012). Parent Psychopathology and Offspring Mental Disorders: Results from the WHO World Mental Health Surveys. *The British Journal of Psychiatry*, *200*, 290-299. <https://doi.org/10.1192/bjp.bp.111.101253>
- National Institute of Mental Health (1996). *CGI: Clinical Global Impressions* (Band 12, 218-222). National Institute of Mental Health.
- Otto, C., Haller, A.-C., Klasen, F., Hölling, H., Bullinger, M., Ravens-Sieberer, U., & Group, B. S. (2017). Risk and Protective Factors of Health-Related Quality of Life in Children and Adolescents: Results of the Longitudinal BELLA Study. *PLOS ONE*, *12*, e0190363. <https://doi.org/10.1371/journal.pone.0190363>
- Pérez, J. C., Coo, S., & Irrázaval, M. (2018). Is Maternal Depression Related to Mother and Adolescent Reports of Family Functioning? *Journal of Adolescence*, *63*, 129-141.

<https://doi.org/10.1016/j.adolescence.2017.12.013>

- Piersma, H. L., & Boes, J. L. (1995). Agreement between Patient Self-Report and Clinician Rating: Concurrence between the Bsi and the Gap among Psychiatric Inpatients. *Journal of Clinical Psychology, 51*, 153-157.
[https://doi.org/10.1002/1097-4679\(199503\)51:2<153::AID-JCLP2270510203>3.0.CO;2-Z](https://doi.org/10.1002/1097-4679(199503)51:2<153::AID-JCLP2270510203>3.0.CO;2-Z)
- Plass, A., Haller, A.-C., Habermann, K., Barkmann, C., Petermann, F., Schipper, M., Wiegand-Grefe, S., Hölling, H., Ravens-Sieberer, U., & Klasen, F. (2016). Faktoren der Gesunderhaltung bei Kindern psychisch belasteter Eltern. *Kindheit und Entwicklung, 25*, 41-49. <https://doi.org/10.1026/0942-5403/a000187>
- Plass-Christl, A., Haller, A.-C., Otto, C., Barkmann, C., Wiegand-Grefe, S., Hölling, H., Schulte-Markwort, M., Ravens-Sieberer, U., & Klasen, F. (2017). Parents with Mental Health Problems and Their Children in a German Population Based Sample: Results of the BELLA Study. *PLOS ONE, 12*, e0180410.
<https://doi.org/10.1371/journal.pone.0180410>
- Reupert, A. E., Cuff, R., Drost, L., Foster, K., Van Doesum, K. T., & Van Santvoort, F. (2013). Intervention Programs for Children Whose Parents Have a Mental Illness: A Review. *Medical Journal of Australia, 199*, S18-S22.
<https://doi.org/10.5694/mja11.11145>
- Sell, M., Barkmann, C., Adema, B., Daubmann, A., Kilian, R., Stiawa, M. et al. (2021a). Associations of Family Functioning and Social Support with Psychopathology in Children of Mentally Ill Parents: Multilevel Analyses from Different Rating Perspectives. *Frontiers in Psychology, 12*, Article 705400.
<https://doi.org/10.3389/fpsyg.2021.705400>
- Sell, M., Daubmann, A., Zapf, H., Adema, B., Busmann, M., Stiawa, M., Winter, S. M., Lambert, M., Wegscheider, K., & Wiegand-Grefe, S. (2021b). Family Functioning in Families Affected by Parental Mental Illness: Parent, Child, and Clinician Ratings. *International Journal of Environmental Research and Public Health, 18*, Article No. 7985.
<https://doi.org/10.3390/ijerph18157985>
- Sell, M., Radicke, A., Adema, B., Daubmann, A., Kilian, R., Stiawa, M. et al. (2021c). Parents with Mental Illness: Parental Coping Behavior and Its Association with Children's Mental Health. *Frontiers in Psychiatry, 12*, Article 737861.
<https://doi.org/10.3389/fpsyg.2021.737861>
- Steinhauer, P. D., Santa-Barbara, J., & Skinner, H. (1984). The Process Model of Family Functioning. *The Canadian Journal of Psychiatry, 29*, 77-88.
<https://doi.org/10.1177/070674378402900202>
- Sweeney, S., & MacBeth, A. (2016). The Effects of Paternal Depression on Child and Adolescent Outcomes: A Systematic Review. *Journal of Affective Disorders, 205*, 44-59.
<https://doi.org/10.1016/j.jad.2016.05.073>
- van Santvoort, F., Hosman, C. M., van Doesum, K. T., & Janssens, J. M. (2013). Children of Mentally Ill or Addicted Parents Participating in Preventive Support Groups. *International Journal of Mental Health Promotion, 15*, 198-213.
<https://doi.org/10.1080/14623730.2013.851816>
- Waldmann, T., Stiawa, M., Dinc, Ü., Saglam, G., Busmann, M., Daubmann, A. et al. (2021). Costs of Health and Social Services Use in Children of Parents with Mental Illness. *Child and Adolescent Psychiatry and Mental Health, 15*, 1-11.
<https://doi.org/10.1186/s13034-021-00360-y>
- Wang, J., Chen, Y., Tan, C., & Zhao, X. (2016). Family Functioning, Social Support, and Quality of Life for Patients with Anxiety Disorder. *International Journal of Social Psy-*

chiatry, 62, 5-11. <https://doi.org/10.1177/0020764015584649>

Weissman, M. M., Wickramaratne, P., Gameraoff, M. J., Warner, V., Pilowsky, D., Kohad, R. G., Verdeli, H., Skipper, J., & Talati, A. (2016). Offspring of Depressed Parents: 30 Years Later. *American Journal of Psychiatry*, 173, 1024-1032.

<https://doi.org/10.1176/appi.ajp.2016.15101327>

Wiegand-Grefe, S., Filter, B., Busmann, M., Kilian, R., Kronmüller, K.-T., Lambert, M. et al. (2021). Evaluation of a Family-Based Intervention Program for Children of Mentally Ill Parents: Study Protocol for a Randomized Controlled Multicenter Trial. *Frontiers in Psychiatry*, 11, Article 61790. <https://doi.org/10.3389/fpsy.2020.561790>

Wiegand-Grefe, S., Geers, P., Petermann, F., & Plass, A. (2011). Kinder Psychisch Kranker Eltern: Merkmale Elterlicher Psychiatrischer Erkrankung und Gesundheit der Kinder aus Elternsicht. *Fortschritte der Neurologie· Psychiatrie*, 79, 32-40.

<https://doi.org/10.1055/s-0029-1245623>

Wiegand-Grefe, S., Geers, P., Plaß, A., Petermann, F., & Riedesser, P. (2009). Kinder Psychisch Kranker Eltern: Zusammenhänge Zwischen Subjektiver Elterlicher Beeinträchtigung und Psychischer Auffälligkeit der Kinder aus Elternsicht. *Kindheit und Entwicklung*, 18, 111-121. <https://doi.org/10.1026/0942-5403.18.2.111>

Wiegand-Grefe, S., Sell, M., Filter, B., & Plass-Christl, A. (2019). Family Functioning and Psychological Health of Children with Mentally Ill Parents. *International Journal of Environmental Research and Public Health*, 16, Article 1278.

<https://doi.org/10.3390/ijerph16071278>

World Health Organization (2019). *ICD 10: International Statistical Classification of Diseases and Related Health Problems: Tenth Revision*. World Health Organization.