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Parenting and Psychopathology in Sibling Pairs

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ABSTRACT – Background: The current study explored the relationship between parenting experience in childhood as a specific aspect of the non-shared environment and the amount of psychopathology in adulthood.

Sampling and Methods: 27 same-sex sibling pairs were studied. In each pair, one proband was a psychiatric outpatient, the other proband a non-patient. All probands filled in the Parental Bonding Instrument (PBI) and the Symptom Checklist-90-Revised (SCL-90-R).

Results: The patients rated higher on practically all SCL-90-R scales whereas no significant differences were found with regard to the PBI ratings. With only one exception, there were no significant correlations between PBI and SCL-90-R ratings in the group of patients. In contrast, all SCL-90-R subscales correlated negatively with paternal care and half of them positively with paternal control in patients' healthy siblings.

Conclusions: The degree of paternal care seems to be most closely related with lack of mental symptoms in psychiatric non-patients. In contrast, parenting does not seem to play a substantial role in patients, presenting with a higher degree of psychopathology. Obviously, environmental factors become less important, the more pronounced the pathology.

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Introduction

Currently, as in the past, there is an interest in the study of possible environmental antecedents of psychopathology and behavioral deviance. Regarding differences in personality - briefly defined as a totality of behavior and inner experience - and in psy-

chopathology, shared environment seems to play only a marginal role¹, even though it may have more effect in extreme situations. Differential treatment of children by their parents in the same family or differential perceptions of such treatment by children represent a systematic non-shared environmental influence. Apart of genetic influence, the variance component of such a non-shared environment is

the source of differential outcomes^{2,3}. Parental bonding can be viewed as a specific aspect of the non-shared environment^{4,5}. Correspondingly, parenting experiences, particularly lack of care, have been found to be potentially causally related in a non-specific manner to a wide range of adult psychopathology⁶, including depression⁷⁻⁹, personality disorders^{10,11} and substance abuse^{12,13}.

We explored whether there is a connection between early environmental influences in terms of parenting experience (parental bonding) in childhood and the amount of psychopathology in adulthood. In order to control for at least some of the many other potential influences, the study was carried out on same-sex sibling pairs; to increase the psychopathology variance, one of the siblings was a psychiatric patient, the other one a psychiatric non-patient. Our hypothesis was 1. that patients would score higher on psychopathology measures (confirming the difference in outcome), 2. that they would indicate suboptimal parental bonding more frequently (score lower on parental care, higher on parental control), and 3. that the psychopathology and parental bonding ratings would correlate with each other. We were particularly interested in a possible differential effect parenting could exert on psychopathology in both subgroups, patients and their healthy siblings; this topic has seldom been addressed in the literature.

Methods

Procedure

The study design was approved by the local ethical committee. The patients were recruited at the Psychiatric Outpatient Service Zürich-Oerlikon, and the patients stated the identity of their siblings. The pairs

were included in the study provided they gave their written informed consent, spoke German fluently, and were prepared to deliver basic socio-demographic data and to fill in the study questionnaires. In the case of the patients having more than one same-sex sibling, the one with the smallest age difference to the patient was included.

Probands

Altogether, 27 proband pairs (54 probands) were studied. In each pair, one proband was a psychiatric outpatient, the other proband his or her sibling of the same sex. According to a self-declaration, the latter had never had the status of a psychiatric inpatient and/or outpatient. There were 10 male and 17 female pairs; the group of patients and siblings did not differ with regard to age ($MN = 38$ years, $SD = 13$ in both groups; $Z = 0.40$, $p = 0.69$) even though there were more pairs with an older patient than an older sibling (70% vs 30%; $\chi^2 = 8.96$, $df = 1$, $p = 0.003$). More healthy siblings were married (44% vs 22%) and less were divorced/separated (15% vs 30%), but the difference in the marital status was not statistically significant ($\chi^2 = 3.50$, $df = 2$, $p = 0.17$). More patients belonged to the lower social class (39% vs 16%; $\chi^2 = 3.24$, $df = 1$, $p = 0.072$). The patients were diagnosed according to the ICD-10¹⁴ classification: 10 (37%) received the principle diagnosis F2 (schizophrenia spectrum disorder); 9 (33%) received the diagnosis F3 (affective disorder); and 8 (30%) received the diagnosis F4-7 (most of them neurotic disorder).

Instruments

Parental Bonding Instrument (PBI)

The PBI¹⁵ measures various attitudes and behaviour of parents as they are remembered

retrospectively by an individual having occurred in his or her first 16 years. The attitudes of each parent are evaluated separately, and the scale consists of 25 items reflecting two dimensions: the dimension of care/involvement vs. indifference/rejection (12 items) and the dimension of control/overprotection vs. encouragement of autonomy/independence (13 items). All items are rated on a Likert scale ranging from 0 to 3. The original 3-week test-retest reliability assessment yielded a Pearson correlation coefficient of 0.76 for the care scale and 0.63 for the control scale¹⁵. Satisfactory reliability and validity of PBI have been confirmed in numerous subsequent studies¹⁶ and its long-term stability over time has been demonstrated¹⁷. The instrument was developed, amongst other reasons, for examining the influence of possible distortions of parental bonding on the psychological functioning of the recipients. The instrument measures the recipient's later judgment of the parents; nevertheless, the lack of an association between the recipient's age and scores on the scale suggest that there is no change in the report of parental attitudes over time. Incidentally, the two dimensions do not appear to be independent; control is linked with lack of care¹⁵.

Symptom Checklist-90-Revised (SCL-90-R)

SCL-90-R¹⁸ is a measure of self-reported psychopathology for use in psychiatric and medical settings. It enables to assess a broad range of psychological and physical symptoms and their intensity at a specific point in time. The scale contains 90 items which are evaluated using a Likert scaling from 0 to 4. The test helps measure 9 primary symptom dimensions (somatization, obsessions-compulsions, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism). In addition, several global indices such as the Global Severity Index (GSI) can be determined, the latter designed to measure the overall psy-

chological distress. The scales have very good psychometric properties. Cronbach's alpha were 0.73-0.90 and test-retest correlation coefficients across a 10-week period 0.68-0.84 for the individual scales¹⁹.

Statistical evaluation

Evaluating the results, χ^2 test was used in the case of categorical, and Wilcoxon test for two dependent samples in the case of continuous variables. Further, Spearman rho correlation coefficients were calculated.

Results

First, the instruments we used were tested for their reliability. Cronbach's alpha values were calculated separately for the patients and their siblings. Regarding PBI, in the patient group, they were 0.92 for the care and 0.94 for the control scale regarding the father, and 0.92 for both scales regarding the mother. In the sibling group, Cronbach's alpha values were 0.93 for the care and 0.91 for the control scale regarding the father, and 0.88 for the care and 0.86 for the control scale regarding the mother ratings. Regarding SCL-90-R, in the patient group Cronbach's alpha values were between 0.83 and 0.94 for the individual symptom scales (except for paranoid ideation scale with a alpha of 0.66); in the sibling group, Cronbach's alpha values were between 0.84 and 0.94 for all individual symptom scales. Cronbach's alpha values were 0.98 and 0.99 for the GSI composite scale in the patient and sibling group, respectively.

As expected, the patients rated higher on all SCL-90-R scales and the differences were statistically significant for the majority of scales (Table I). Regarding PBI scores, the differences between patients and sib-

lings did not reach the level of statistical significance, even though the patients tended to rate lower on the care and higher on the control/overprotection PBI scales (Table I). Optimal bonding is characterized by high care and low control ratings. A total of 23 patients and 25 siblings rated both parents; an optimal bonding with regard to at least one parent was indicated by 23 (92%) healthy siblings, but only by 15 (65%) patients ($\chi^2 = 5.21$, $df = 1$, $p = 0.022$).

In Table II, significant correlations between PBI and SCL-90-R ratings are presented, separately for the group of patients and their siblings. As can be seen, with the only exception of paranoid ideation - being positively correlated with high mother control -, there were no other significant correlations in the group of patients. In contrast, all SCL-90-R subscales correlated negatively with paternal care and half of them positively with paternal control.

Table I
Comparison of patients and siblings with regard to SCL-90-R and PBI

	Patients 27 (100)	Siblings 27 (100)	Significance Z	p
SCL-90-R scores: MN $\pm$ SD				
Somatization	1.01 $\pm$ 0.86	0.53 $\pm$ 0.60	2.48	.013
Obsessions-compulsions	1.31 $\pm$ 1.09	0.71 $\pm$ 0.73	2.45	.014
Interpersonal sensitivity	1.20 $\pm$ 0.93	0.76 $\pm$ 0.85	1.88	.060
Depression	1.42 $\pm$ 1.05	0.71 $\pm$ 0.75	2.73	.006
Anxiety	1.07 $\pm$ 0.89	0.53 $\pm$ 0.77	3.04	.002
Hostility	0.76 $\pm$ 0.75	0.51 $\pm$ 0.59	1.26	.208
Phobic anxiety	0.85 $\pm$ 0.92	0.34 $\pm$ 0.63	2.26	.023
Paranoid ideation	0.93 $\pm$ 0.62	0.62 $\pm$ 0.87	2.46	.014
Psychoticism	0.72 $\pm$ 0.68	0.45 $\pm$ 0.70	2.35	.019
Global severity index	1.07 $\pm$ 0.71	0.58 $\pm$ 0.67	3.15	.002
Positive symptom distress index	1.8 $\pm$ 0.6	1.4 $\pm$ 0.5	3.73	<.001
Positive symptom total	48.1 $\pm$ 22.5	30.8 $\pm$ 23.9	2.64	.008
PBI scores: MN $\pm$ SD				
Mother care	23.8 $\pm$ 8.7	26.1 $\pm$ 7.3	1.03	.30
control	15.0 $\pm$ 9.9	12.0 $\pm$ 7.7	0.91	.36
Father care	19.6 $\pm$ 10.0	22.8 $\pm$ 8.9	1.22	.22
control	13.3 $\pm$ 10.8	8.9 $\pm$ 8.4	1.70	.09

Table II
Correlations between PBI und SCL-90-R rating scales, separately for patients and their siblings

PBI	Patients Mother Care Control	Father Care Control	Siblings Mother Care Control	Father Care Control
Somatization				-.49**
Obsessions-compulsions				-.49**
Interpersonal sensitivity			-.39*	-.53**
Depression				-.51** .45*
Anxiety				-.48**
Hostility				-.44*
Phobic anxiety				-.53** .49**
Paranoid ideation	.40*		-.42*	-.51** .42*
Psychoticism				-.66** .46*
Global severity index				-.56* .40*

PBI mother n = 27, PBI father n = 26; * $p < .05$, ** $p < .01$

Discussion

In this study, a group of psychiatric outpatients with different diagnoses were compared with their same-sex healthy siblings. Participants from both groups filled in the questionnaires reliably. The patients scored higher on all SCL-90-R scales, even though the difference was only marginally significant in the case of interpersonal sensitivity and not statistically significant in the case of hostility; psychiatric patients undergoing treatment are indeed not necessarily more aggressive than others. Thus, as expected, the patients were more symptomatic on the broad scale of psychopathology and the difference in outcome was confirmed. Incidentally, even our siblings' ratings were higher on all symptom dimensions (range 0.34 - 0.76) than were the ratings of the representative general population sample (range 0.22 - 0.48) studied by Hessel *et al.*²⁰; correspondingly, Global Severity Index was also higher (0.58 ± 0.67 vs 0.38 ± 0.39). In contrast, there were no significant differences between the two groups with regard to the individual PBI ratings. Again, the ratings of all our probands were much more similar to ratings reported for a varied psychiatric in- and outpatient sample than for a representative community sample²¹. Even though it was not significant, the PBI ratings tended towards the expected lower values for parental care and towards higher values for parental control in the patients and one third of the patients indicated no optimal bonding with either parent. Correspondingly, less PBI parental care and more control/overprotection were indicated by schizophrenic than by non-schizophrenic same-sex twins, regardless of whether the subjects were monozygotic or dizygotic²² and similar results were found with regard to depression and anxiety²³. Considering

probable differences in perception, our result shows that the parenting style did not differ substantially in the same home.

The most interesting result of the study, presented in Table II, shows 1. The degree of psychopathology correlated highly and significantly with certain PBI dimensions in the healthy siblings, but not in the patients, and this in spite of the fact that there was a greater ratings range in the patient group. As in only one of the SCL-90 items the average rating was slightly above 2 (range 0 - 4), the lack of association between parenting and psychopathology in the clinical group can not be due to a ceiling effect on the SCL-90-R. 2. The correlations in the non-patients concerned paternal ratings, but not - with two exceptions - maternal ratings. 3. Negative correlations of care with psychopathology seem to be more pronounced than positive correlations with the dimension of control. In summary, the degree of paternal care seems to be most closely related with a lack of mental symptoms in this sample of psychiatric non-patients.

Parental care was estimated to be more important than parental control in general and in depression in particular²⁴. Parental attitudes are due, in part, to the offspring's characteristics and these probably have a greater impact on the love and care provided by a parent than on the parental approach to discipline and control²⁵; personal characteristics of children may elicit parental warmth²⁶ and non-patients may possibly be better able to elicit such positive parental attitudes. The finding of a greater impact of paternal - compared with maternal - parenting is impressive but difficult to explain; in our previous study we demonstrated a similarly pronounced influence of paternal parenting (also using PBI) on personality disorder pathology in men, but not in women²⁷. The present result was obtained in a sample with a majority of over 60% of women.

Whereas significant relationships have been found between PBI and SCL-90-R ratings in healthy siblings, practically no such correlations have been found in patients. It follows that in patients presenting a higher degree of psychopathology, parenting – as one of the factors of non-shared (and shared) environment – does not play a substantial role; we speculate that genetic factors are increasingly more important the more pronounced pathology becomes. In the same vein, heritability of major depression has been shown to be greater for more restrictive definitions of the disorder, reflecting its more severe, more pronounced form²⁸ and other results suggested unspecific genetic vulnerability for psychotic illness to be dependent on the severity of the overall psychopathology²⁹. Incidentally, psychopathology of the patients in our sample was partially of psychotic origin. There is a reciprocal relationship between the importance of environmental stress and genetic factors: With increasing levels of family dysfunction, the proportion of variance in cigarette smoking due to genetic factors decreased, and that due to environmental effects increased³⁰.

Thus, our results, achieved with a simple design, are in accord with the results of the studies carried out with much more sophisticated methods. However, we are well aware of the limitations of our study: Only a relatively small sample of same-sex pairs could be recruited and the sample was heterogeneous with regard to psychopathology. This is a correlational study and correlations do not imply causal relationships. Finally, the importance of paternal and not maternal parenting demonstrated in this study is not easy to explain. Therefore, the exploratory character of this investigation should be stressed. In a future study with a larger sample, the results should be verified. Recruiting more subjects and including more sophisticated diagnostic measures would make it possible

to conduct separate analyses for psychotic and non-psychotic disorders and to correlate PBI patterns with other dimensions of abnormality, such as externalizing and internalizing psychopathology. Moreover, it would be interesting to include additional measures other than the PBI to assess the characteristics of the home environment.

Sabelli and Carlson-Sabelli³¹ developed a paradigm of “biological priority and psychological supremacy”: In every mental process, its biological aspects have priority, while social and psychological aspects have supremacy. Biological processes are essential for psychological function (priority), and are more determined by causal factors and less by choice. Social and psychological processes, being more complex in informational content, have supremacy for control and are more amenable to change by conscious choice. Our results correspond well with this paradigm: The more pronounced the psychopathology the more weight genetically determined biological processes have and the more emphasis is placed on biological therapies. Less pronounced psychopathology may well be due to environmental causes and be more amenable to change by non-biological interventions.

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