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Parental internalizing problems in a community sample: association with child psychosocial problems

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Background: Offspring of depressed, anxious and stressed parents are at increased risk of developing mental disorders. However, most studies investigating this association concentrate on clinical symptoms. The objective of this study is to examine the association between parental internalizing problems (symptoms of depression, anxiety and stress) and child psychosocial problems in a community sample, crude and adjusted for potential confounders (such as child gender, parental educational level, ethnicity) and whether parental concerns affect this association. **Study Design:** Preceding a routine health examination, cross-sectional data were obtained from a representative sample of 9453 parents of children aged 9–11 years (response 65%). Measures of parental internalizing problems (Depression Anxiety Stress Scale), child psychosocial problems (Strengths and Difficulties Questionnaire—Total Difficulties Score), background characteristics and parental concerns were completed by the parents. **Results:** Parental internalizing problems were associated with child psychosocial problems in crude analysis and after adjustment for child, parent and family characteristics [$\beta = 0.12$, 95% confidence interval (CI) = 0.10–0.14]. Parental concerns about their child's emotional and behavioural problems were also strongly associated with child psychosocial problems. After adjustment for these parental concerns, the association of parental stress with child psychosocial problems remained, while the association of parental depression and anxiety symptoms with child psychosocial problems lost statistical significance. **Conclusions:** As in clinical samples, parental internalizing problems in a community sample are associated with child psychosocial problems. Parental concerns on the child seem to affect this association. Further research is needed on the mechanisms affecting this association.

Introduction

Many clinical studies have shown that offspring of depressed, anxious and stressed parents are at risk of a spectrum of psychopathological disorders.[1,2] Parental depression and stress are not only associated with affective disorders and attention deficit disorders, but also with substance abuse, poor social functioning and school problems (e.g. attention problem, learning disabilities) in children.[3,4] Furthermore, these children are at increased risk of neglect and abuse.[5–7] Offspring of anxious parents are more likely to have anxiety disorders.[1,2] Depression and anxiety occur most frequently from the ages of 25–44 years,[8,9] the stage of life at which most adults become parents. It is therefore not surprising that internalizing problems in parents are not uncommon. Moreover, the levels of depression, anxiety and psychological stress are higher among parents with children living at home than in non-parents.[10]

Most research on the impact of parental mental health problems on child psychosocial problems has been conducted in clinical samples, particularly among parents with diagnosed mental problems.[1,3,4] However, depression and anxiety can be considered as disorders that vary along a continuum of severity.[11] It is not known whether parental internalizing problems below the clinical threshold are associated with child psychosocial problems. As such, it may be useful to assess symptoms of depression, anxiety and stress in non-clinical populations of parents.

Research using clinical samples suggests that several factors affect the association between parental mental health problems and child psychosocial problems,[12] and an important factor is that parents are overly concerned for their child. Parental concerns about the behavioural and emotional problems of their child have been proven to have a positive predictive power for child psychosocial problems,[13–16] and anxious parents are more concerned about their child's wellbeing.[17] Again, it is unknown whether this link holds for sub-threshold parental problems in the community.

Finally, various demographic and family characteristics have been shown to affect both psychosocial problems in children and parental internalizing problems. Therefore, these characteristics may be confounders affecting the association. For example, risk of psychosocial problems in children was higher for children who recently experienced a negative life event, such as parental unemployment or parental divorce or separation.[18] Children growing up in families at a socioeconomic disadvantage or in single-parent families were also more likely to develop child psychosocial problems.[19] Marital problems, unemployment and a low socioeconomic position also increased the chance of internalizing problems in adults.[20,21] Furthermore, higher rates of psychosocial problems were found in boys,[22] among immigrant children and adults[14,23–25] and in children with a chronic illness.[26,27] Compared with parents of healthy children, parents of children with chronic illness scored higher for internalizing problems.[28]

The aim of this study is to examine the association between parental internalizing problems (i.e. symptoms of depression, anxiety and stress) and child psychosocial problems in a

community sample, crude and adjusted for background characteristics, and to assess to what extent parental concerns affect this association.

Methods

Procedure and sample

Data were collected as part of the routine preventive health assessments, which all Dutch children periodically undergo. Primary school children were screened for physical and psychosocial problems. Along with an invitation for a preventive health examination, all parents of children aged 9–11 years received a questionnaire on symptoms of depression, anxiety and stress and on the psychosocial problems of their children. There were no exclusion criteria. Data were obtained from 9453 parents (response rate: 65%). Participating parents and children did not substantially differ from the Dutch general population with regard to family composition, work situation of the parents and child gender. However, highly educated parents were over-represented and immigrants were slightly under-represented in the sample.[29] The study was approved by the local Medical Ethical Committee.

Measures

Child psychosocial problems were measured by the Strengths and Difficulties Questionnaire Total Difficulties Score (SDQ-TDS).[30,31] This questionnaire has been validated in the Netherlands[32,33] for children aged 7–12 years. The SDQ consists of 25 symptom items describing positive and negative aspects of child behaviour, which are scored on a three-point scale (0 = 'not true', 1 = 'somewhat true' and 2 = 'certainly true'). Scores can be allocated to five subscales of five items each: emotional symptoms, conduct problems, hyperactivity, inattention, peer problems and pro-social behaviour. The SDQ-TDS (range 0–40) is the sum of the scores on all subscales except the pro-social behaviour subscale; its internal consistency in the current study was good (Cronbach's α 0.82).

Parental internalizing problems were measured by the 21-item Depression Anxiety Stress Scale (DASS).[11] The DASS-21 consists of three subscales of seven items each: a depression scale, an anxiety scale and a stress scale (Cronbach's αs were 0.83, 0.76 and 0.84, respectively, and 0.90 for the total score). Participants reported the extent to which they had experienced each symptom over the previous week on a four-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time).

Parents provided information on relevant child background characteristics, i.e. ethnicity (country of birth of the parents and the child), parental educational level (highest degree obtained by each parent) on an eight-point scale arranged in hierarchical order from 0 (no education) to 7 (university). As the association of parental educational level with child psychosocial problems was rather linear, we used this continuous variable with seven levels. Parental employment status was measured for each parent and categorized as employed (paid job for >12 h/wk) or else unemployed, voluntary work or paid job <12 h/wk. The family financial situation was assessed by the degree to which parents were 'able to make ends meet' (0 = no difficulties, 1 = no difficulties, but thrifty, 2 = moderate difficulties, 3 = severe difficulties). Respondents were asked to report the family composition (two- or single-parent family) and the current age of both parents.

Finally, parents indicated their concerns about their child's behavioural and emotional problems by selecting one of three categories (0 = not at all, 1 = only a little, 2 = quite a lot).[13]

Data analyses

We first assessed differences in child psychosocial problems by background characteristics; differences were tested using Student's *t*-tests and *F*-tests in an analysis of variance. Next, we computed Pearson's correlation coefficients between parental Depression, Anxiety and Stress and child psychosocial problems. Subsequently, multiple linear regressions were conducted to model this relationship. In a second model, we adjusted for a broad range of background characteristics traditionally considered to be relevant in predicting a high risk of child psychosocial problems and parental internalizing problems. In the third model, parental concerns about child emotional and behavioural problems were added to the analyses. To verify whether parental concerns mediated the relationship between parental internalizing problems and child psychosocial problems, we conducted a mediational analysis. Additionally, the DASS total scale was replaced by the DASS subscales. Data were analysed using the Predictive Analytics SoftWare Statistics, version 18.0.3.

Results

Of the 9453 questionnaires, most were completed by mothers (77.8%), 7.1% by fathers, 13.8% by both parents jointly and 1.1% by other relatives or unknown. The mean age of the participating parents was 42.10 (SD = 4.69) years. The mean age of the children concerned was 10.13 (SD = 0.77) years. Further demographic information is presented in table 1. In general, boys had higher mean psychosocial problem scores than girls. Children with less favourable background characteristics had higher mean psychosocial problem scores (table 1).

Table 1 Distribution of family, parent and child characteristics and mean SDQ-TDS[a]

Background characteristics	*n*[b]	%	Mean SDQ-TDS	SD[c]	*P*-value[d]
Gender child	8763				<0.0001
Male	4325	49.4	6.7	5.4	
Female	4438	51.6	6.6	4.8	
Child immigrant	8689				<0.05
Yes	153	1.8	7.2	5.6	
No	8536	98.2	6.1	5.1	
Education level mother	8518				<0.0001
Low	2351	27.6	7.2	5.5	
Medium	3912	45.9	6.0	5.0	
High	2255	26.5	5.2	4.7	
Education level father	7981				<0.0001
Low	2313	29.0	7.0	5.4	
Medium	3184	39.9	6.0	5.0	
High	2484	31.1	5.2	4.7	
Employment mother	8523				<0.0001
Yes	6660	78.1	5.9	5.0	
No	1863	21.9	6.9	5.7	
Employment father	7943				<0.0001
Yes	7496	94.4	5.9	5.0	
No	447	5.6	7.4	6.1	
Family financial situation (making ends meet)	8523				<0.0001
No difficulties	4474	52.5	5.4	4.7	
No difficulties, but thrifty	3221	37.8	6.6	5.3	
Moderate difficulties	683	8.0	8.3	5.8	
Severe difficulties	145	1.7	8.9	5.7	
Family composition	8706				<0.0001
Two parents	7498	86.1	5.93	5.0	
Single parent	883	10.1	7.78	5.7	
Other	325	3.8	6.6	4.9	
Chronic illness child	8628				<0.001
Yes	827	9.6	9.5	6.9	
No	7801	90.4	5.8	4.8	
Recent divorce parents	8382				<0.0001
Yes	228	2.7	8.4	5.9	
No	8154	97.3	6.0	5.0	

a: SDQ-TDS, Strengths and Difficulties Questionnaire—Total Difficulties Score.
b: Totals differ owing to missing data.
c: SD, standard deviation.
d: *t*-tests and *F*-tests in analysis of variance regarding (mean) differences by SDQ-TDS.

Table 2 Parental internalizing problems (DASS) and child psychosocial problems (SDQ-TDS): multiple regression analysis

Independent variables	Model 1				Model 2				Model 3a				Model 3b			
	β[a]	95% CI		*P*	β	95% CI		*P*	β	95% CI		*P*	β	95% CI		*P*
1. DASS[b] total	0.27	0.25	0.29	0.00	0.24	0.21	0.26	0.00	0.12	0.10	0.14	0.00				
DASS depression													0.00	−0.03	0.03	0.91
DASS anxiety													0.01	−0.02	0.04	0.43
DASS stress													0.12	0.09	0.15	0.00
R^2 change	.07***												0.08***			
2. Gender child					0.09	0.07	0.11	0.00	0.08	0.06	0.10	0.00	0.08	0.06	0.10	0.00
Single-parent family					0.01	−0.04	0.05	0.83	0.01	−0.03	0.05	0.64	0.01	−0.03	0.05	0.62
Educational level mother					−0.10	−0.13	−0.07	0.00	−0.11	−0.13	−0.09	0.00	−0.12	−0.14	−0.09	0.00
Educational level father					−0.04	−0.07	−0.01	0.00	−0.04	−0.06	−0.02	0.00	−0.04	−0.07	−0.02	0.00
Difficulties making ends meet					0.09	0.07	0.12	0.00	0.05	0.03	0.08	0.00	0.05	0.03	0.08	0.00
Employment mother					−0.01	−0.03	0.01	0.32	0.00	−0.02	0.02	0.77	0.00	−0.02	0.02	0.63
Employment father					−0.02	−0.05	0.00	0.09	−0.01	−0.03	0.01	0.44	−0.01	−0.03	0.01	0.37
Age mother					−0.03	−0.07	0.00	0.05	−0.03	−0.06	0.00	0.07	−0.03	−0.06	0.00	0.07
Age father					−0.01	−0.04	0.02	0.48	0.00	−0.03	0.03	0.93	0.00	−0.03	0.03	0.92
Child immigrant					0.00	−0.03	0.02	0.77	0.00	−0.02	0.02	0.90	0.00	−0.02	0.02	0.83
Chronic illness child					0.20	0.18	0.22	0.00	0.10	0.08	0.12	0.00	0.10	0.08	0.12	0.00
Recent divorce parents					0.01	−0.02	0.04	0.47	−0.03	−0.06	0.00	0.04	−0.03	−0.05	0.00	0.06
R^2 change					0.09***								.09***			
3. Concerns about child behavioural problems									0.24	0.21	0.26	0.00	0.23	0.21	0.26	0.00
Concerns about child emotional problems									0.34	0.31	0.36	0.00	0.34	0.31	0.36	0.00
R^2 change									0.20***				0.19***			
Total R^2 (adjusted)	0.07				0.16				0.36				0.36			

a: Standardized regression coefficient.
b: DASS, Depression Anxiety Stress Scale.
*$P<0.05$; **$P<0$ .01; ***$P<0.001$.

The univariate correlations between the scores on the DASS total scale and the Depression, Anxiety and Stress subscales and child psychosocial problems (SDQ-TDS) were 0.27, 0.21, 0.19 and 0.27, respectively (all $P<0.001$).

Linear regression analysis showed that parental internalizing problems were associated with psychosocial problems in children [$\beta=0.27$, 95% confidence interval (CI) = 0.25–0.29], and jointly explained 7% of the variance in child psychosocial problems (table 2, Model 1).

The association between parental internalizing problems (i.e. the DASS total score) and child psychosocial problems decreased, but remained statistically significant after adjustment for background variables ($\beta=0.24$, 95% CI = 0.21–0.26; table 2, Model 2). The child's gender, parental education, family financial situation and chronic illness of the child were also significantly associated with child psychosocial problems and explained an additional 9% of the variance.

After adjustment for parental concerns about behavioural and emotional problems of the child, the association of child psychosocial problems with parental internalizing problems further decreased ($\beta=0.12$, 95% CI = 0.10–0.14; table 2, Model 3a). In a model with no other covariates, adjustment for parental concerns about child behavioural and emotional problems yielded a decrease in the initial beta from 0.27 to 0.13 (95% CI = 0.10–0.15).

Parental internalizing problems consisted of symptoms of depression, anxiety and stress. When the DASS total scale was substituted by the DASS subscales, only the association between parental stress and child psychosocial problems was statistically significant ($\beta=0.12$, CI = 0.09–0.15; table 2, Model 3b). The explained variance did not significantly change in this model compared with the model with the DASS total scale (table 2, Models 3a and 3b). Analyses that included only mothers resulted in similar outcomes (not shown).

Discussion

This study explored the association between parental internalizing problems and child psychosocial problems using crude analysis and analysis adjusted for background characteristics, and the degree to which parental concerns contributed to this association in a community sample. We found a relationship between parental internalizing problems and child psychosocial problems, particularly concerning parental stress. This was independent of a range of background characteristics that are associated with the high risk of child psychosocial problems. Moreover, parental concerns about the behavioural and emotional problems of their child considerably affected the relationship between parental internalizing problems and child psychosocial problems. This suggests a partial mediation by parental concerns of the association between parental internalizing problems and child psychosocial problems.

This study is among the first to show the association between parental internalizing problems and child psychosocial problems in a large non-clinical sample. The influence of parental stress on child behavioural problems has been confirmed by several other studies particularly carried out in clinical samples.[34] However, contrary to findings of clinical samples, we found only a weak association between parental internalizing problems and child psychosocial problems. An explanation may be that the number of symptoms of depression and anxiety in parents was on average low in this community sample. Such relatively low, even though increased, levels of parental depression and anxiety may only be related to psychosocial problems in children to a limited degree.

Furthermore, when adjusted for parental concerns,[13,15] the association between parental internalizing problems and child psychosocial problems further decreased. Parental concerns may be the result of parental internalizing problems or child psychosocial problems. Pathway analysis, based on longitudinal data, is required to elucidate the causal process and to describe the directed dependencies among parental internalizing problems and child psychosocial problems with regard to other factors possibly affecting this relationship.

Study strengths and limitations

An important strength of this study is its large, representative community sample of parents with symptoms of depression,

anxiety and stress that vary in severity. This permitted analyses of the effects of these symptoms on psychosocial problems of children aged 9–11 years, controlling for a broad array of variables predictive of child psychosocial problems.

Furthermore, we achieved a high response rate.

This study also has limitations. Definitive conclusions on causal routes cannot be made based on our findings. Parents may be depressed, anxious or stressed as a consequence of the psychosocial problems of their children or the concerns they have regarding their child's emotional and behavioural problems. Earlier research indicates that this relationship may indeed be bidirectional.[35,36]

Selective attrition may have affected our findings, and may have led to a slight underestimation of the occurrence of mental disorders among parents. One previous study showed response to be slightly lower among these parents,[37] whereas another population-based study did not show any differences.[38] Furthermore, the emotional state of the responding parent may have affected the evaluation of the child's psychosocial problems. Research has shown that parents with internalizing problems tend to report a higher number of psychosocial problems in their children than the children do.[39] The use of additional informants regarding child psychosocial problems (such as child healthcare professionals and teachers) may be necessary to further clarify the presence of the child's psychosocial problems.

Study implications

Our findings show that children whose parents have internalizing problems have an increased risk for behavioural and emotional problems. These children thus deserve additional attention in preventive child health care and from professionals providing care to these parents. Research is needed to determine a threshold above which parental internalizing problems pose a substantial risk to their offspring. In addition, it requires further research whether adequate treatment of the parental problems also leads to a reduction of child behavioural and emotional problems.

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Conflicts of interest: None declared.

Key points

- In a community sample, parental internalizing problems were associated with child psychosocial problems.
- Mainly parental stress accounted for differences in child psychosocial problems.
- Parental concerns about the child's behavioural and emotional problems affected the relationship between parental internalizing problems were associated with child psychosocial problems considerably.

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Prevalence and risk factors of Internet addiction in high school students

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Aim: In this study, the prevalence and risk factors of Internet addiction in high school students was investigated. **Material and Method**: This cross-sectional study was performed in the Mersin Province in 2012. The study sample consisted of students attending high school in the central district of Mersin. The data were summarized by descriptive statistics and compared by a binary logistic regression. **Results:** Our study population included 1156 students, among whom 609 (52.7%) were male. The mean age of the students was 16.1 ± 0.9 years. Seventy-nine percent of the students had a computer at home, and 64.0% had a home Internet connection. In this study, 175 (15.1%) students were defined as Internet addicts. Whereas the addiction rate was 9.3% in girls, it was 20.4% in boys ($P < 0.001$). In this study, Internet addiction was found to have an independent relationship with gender, grade level, having a hobby, duration of daily computer use, depression and negative self-perception. **Conclusion:** According to our study results, the prevalence of Internet addiction was high among high school students. We recommend preventing Internet addiction among adolescents by building a healthy living environment around them, controlling the computer and Internet use, promoting book reading and providing treatment to those with a psychological problem.

Introduction

The advent of computers and the Internet has led to a series of dramatic changes and developments in the ways of generating, storing and sharing knowledge. Overuse of computers and the Internet creates physical, mental and social problems. Although it is not recognized as a standard definition, *Internet addiction* is defined as experiencing physical, mental and social problems because of Internet and computer overuse. Internet addiction has a negative impact on workplace relations, interaction with friends, academic life and family life. Internet addicts spend most of their life in front of the computer passing time with e-mails, chatting, discussion forums and online games. In a sense, we can say that Internet addicts move their social lives into the Internet environment. Today, problematic Internet use and Internet addiction appear to be social issues that should be addressed without delay. In this regard, adolescents and young adults constitute the largest target group.[1–5]

A meta-analysis of Internet addiction has noted that high school students and young men are the high-risk groups.[3] In Taiwan, the prevalence of Internet addiction among high school students has been reported as 13.8%, with higher rates in men and students attending vocational schools.[6] However, another study in Taiwan showed the prevalence of Internet addiction in high school students as 20.1%.[4] In China, 2.4% of the adolescents were Internet addicts, and scores for comorbid disease and impulsivity scale scores are reported to be higher in students with Internet addiction.[7] In Korea, it was shown that 30% of the adolescents