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Associations linking parenting styles and offspring personality disorder are moderated by parental personality disorder, evidence from China

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ABSTRACT

The aim of the study is to examine the association linking parenting and personality disorder controlling for parental personality disorder, and whether this association is moderated by parental PD. Data were from community-dwelling high school students aged 18 and above and their parents living in Beijing, China. A total of 181 cases and 2605 controls were included in this study. Personality disorder in students was assessed via a two-stage approach, Personality Diagnostic Questionnaire as a screening tool and International Personality Disorder Examination as the diagnostic tool. Information about parenting was collected from students using Egna Minnen av. Betraffande Uppfostran. Negative parenting styles, e.g. rejective or over-protective parenting, were found to be associated with the occurrence of personality disorder. Conflictive parenting styles were also found to be associated with personality disorder. Generally stronger associations were found for students with parental personality disorder as compared to students without parental personality disorder. Findings from this study support the role of parenting in the occurrence of PD, especially for children with family history of personality disorder.

1. Introduction

It is well known that personality disorder (PD) is common in psychiatric patients and not rare in the general population e.g. (Torgersen et al., 2001; Huang et al., 2002; Newton-Howes et al., 2008). PD has been associated with considerable disease burden. For example, Soeteman et al. (2008) found that PD was associated with decreased quality of life to a degree similar to physical illnesses such as Parkinson's disease; Skodol et al. (2002) found the PD-associated disability was comparable to that of depressive disorders. In this context, it is of importance to understand the causes of PD and to identify potentially modifiable factors to guide prevention and intervention strategies. The occurrence of PD is influenced by both environmental and genetic factors (Torgersen et al., 2000; Coolidge et al., 2001). One of the most studied environmental aspects is parenting styles. Numerous studies have linked parenting to PD (Stravynski et al., 1989; Liu et al., 2000; Johnson et al., 2006a, 2006b; Thimm, 2010). For example, Johnson et al. (2006a) found children who experienced low parental affection and aversive parenting were more likely to develop PD in early adulthood. A previous study of our research team also found associations linking parenting and PD among Chinese college students (Liu et al., 2000). In the absence of ethical experimental studies in human, it is essential to control for potential confounders in order to make causal inference. In this context, parental PD can be qualified as one of the most important confounders in the parenting–PD association because parents with PD were more likely to be engaged in negative parenting behaviors (Johnson et al., 2006b) and our research team and others have found familial aggregation in PD occurrence (Kendler et al., 1995; Fassino et al., 2009; Cheng et al., 2010). Nonetheless, to the best of authors' knowledge, few studies have controlled for parental PD. Conflictive parenting styles have also been proposed to be associated with personality development, the association of which has not yet been fully explored (Fruzzetti et al., 2005). Additionally, there has been evidence that individuals with certain genotype may be more vulnerable to environmental stress (e.g. Caspi et al., 2002; Bardi et al., 2005; Ducci et al., 2008; Wagner et al., 2009). Thus, children growing up in a PD family may be more likely to suffer from aversive parenting. Nonetheless, there has been no published evidence addressing this issue. From a public health perspective, investigating family history of PD is relevant because it is relatively easier to observe (as compared to genotypes). Thus, it is more feasible in terms of serving as a basis for prevention and intervention strategies. Additionally, evidence on the parenting–PD association is almost exclusively from Western countries. Since personality may be culturally sensitive, evidence from other populations with distinct cultures is an important but lacking piece (APA, 2000; Huang et al., 2006). Against this background, the aim of the current study is to 1) estimate the association between parenting styles and offspring PD controlling for parental PD by means of stratification; 2) estimate whether parental PD moderates the association linking

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parenting styles and offspring PD, using data from high school students age 18 and above and their parents living in Beijing, China.

2. Methods

2.1. Sample and procedure

Using stratified cluster sampling, 10,039 high school students from 25 high schools in Beijing, China, were drawn to be eligible participants for this study. Three levels of stratification were conducted. First, schools were stratified by location (urban or rural). Second, schools were stratified by the income level (high, medium, or low) of the location (district) of the school. Finally, schools were stratified by the rank of the school (the 1st, 2nd, and 3rd tertiles). One or two schools from each stratum were selected based on availability. All students of the senior grade in sampled schools were asked for participation. A total of 9892 (98.5% of all eligible students) students participated in the study.

2.2. Assessment of PD

The diagnosis of PD among students consisted of two steps: Personality Diagnostic Questionnaire-fourth edition (PDQ-4) as the screening tool and International Personality Disorder Examination (IPDE) as the diagnostic tool. First, students filled out PDQ-4 in classrooms. PDQ-4 is an 85-item questionnaire developed by Steven Hyler (Hyler et al., 1990) and has been translated into Chinese (Huang et al., 1998). Due to the high sensitivity of PDQ-4 among high school students (Huang et al., 2002), it was used as a screening tool for the student survey. In the diagnostic stage, students with positive screening scores (42 and above) in PDQ-4 were invited to diagnostic interviews. IPDE is a semi-structured clinical diagnostic inventory based on criteria listed in the International Classification of Diseases-tenth version (ICD-10, Loranger et al., 1994). Previous studies indicated that IPDE was a valid diagnostic tool of PD in the Chinese population (Han and Xu, 1998). Trained psychiatrists assessed PD via face-to-face interviews. Good reliability was found from a small scale reliability test before the survey (kappa >0.9). Four hundred thirty four students had a PDQ-4 score greater than 42. Among the 434 students, 357 (83.2% of 434) completed the IPDE interview. A total of 181 students were diagnosed to be PD cases, of which 167 (92.3% of 181) had valid parent questionnaires. All students with a PDQ-4 score less than 20 were identified as controls. Two thousand six hundred and five students were defined as controls according to PDQ-4 scores. Table 1 provides a description of the study sample.

Parental PD was assessed by PDQ-4, which was filled out by students' parents at home. According to results from a diagnostic study of PDQ-4 using a sample of Chinese adults, 40 was determined to be the positive threshold (positive predictive value, PPV = 87%) and 20 to be the negative threshold (negative predictive value, NPV = 86%) for parents (Huang et al., 2002). Those whose scores fell between positive threshold and negative threshold were excluded due to potentially high misclassifications.

2.3. Assessment of parenting styles

Parenting styles were assessed via the Egna Minnen av. Betraffande Uppfostran (EMBU), which is an 81-item self-report inventory on parenting practices developed in Sweden. Four dimensions were measured by EMBU: parental rejection, emotional warmth, over-protection, and subjective favoring (Perris et al., 1980). Because the majority of the sampled students were only children, there was a lack of heterogeneity in the subjective favoring dimension. Thus, it was not used in the current study. The Chinese version of EMBU has been found to be valid and reliable (Yue et al., 1993; Zhang et al., 1993). The EMBU was filled out by students regarding paternal and maternal parenting styles, respectively. For all EMBU dimensions, the higher score can be understood as a higher frequency that the parent was engaged in the specific type of parenting. High scores in parental rejection and over-protection, and low scores in emotional warmth were deemed as negative parenting behaviors. Besides the dimensional scores, a total EMBU score was also calculated by adding the rejection and over-protection score and the inverse of the emotional warmth scores.

Survey staff members provided students and their parents with a complete description of the study prior to the survey. The study protocol was approved by the Institutional Review Board of the Institute of Mental Health, Peking University.

2.4. Data analysis

In the first steps of analysis, the occurrence of parental PD was estimated via contingency tables and proportions; EMBU scores were estimated via means and standard deviation for PD students and non-PD students, respectively. In the next steps of analysis, the Generalized Linear Models with a logit link was used to estimate the association between parenting styles and student PD. Stratification method was used in order to control for parental PD. Separate models were fit for the total EMBU score (the sum of maternal and paternal scores), maternal score, and paternal score. Moderation effect was evaluated by including the product term of parental PD by parenting in the model. In other words, for each regression model, there were three terms: parental PD, parenting, parental PD parenting. The strength of associations was presented in the form of Odds Ratio (OR). The EMBU score was entered as a continuous variable. Thus, the OR meant the increment in the odds of PD when there was one unit increment in EMBU score. An assumption for this approach is that there was a linear relationship between EMBU scores and the occurrence of PD. As a post-estimation check of this assumption, higher order variables for EMBU score were added into the models. Categorical variables using tertile and quartile cut points were also added to check the linear assumption. Since models without these terms were nested within models with these terms, likelihood-ratio tests were performed to evaluate if the inclusion of these terms improved model fitting.

Next, a categorical variable for conflictive parenting was created. In order to do this, parenting styles were first dichotomized into 'yes' and 'no' using a pre-defined cut point, the 15 percentile. For each EMBU dimension, all persons with a score in the upper (for rejection and over-protection) or lower (for emotional warmth) 15 percentile were coded as 'yes'; otherwise coded as 'no.' Conflictive negative parenting was defined as the co-occurrence of over-protection and either rejection or lack of emotional warmth. Non-conflictive negative parenting includes rejection only, or lack of emotional warmth only, or over-protection only, or the co-occurrence of rejection and lack of emotional warmth. Thus, three categories were no negative parenting (0), non-conflictive negative parenting (1), and conflictive negative parenting (2). This categorical variable was entered in the model to estimate the association linking conflictive parenting and PD. The reference group is the no negative parenting group.

All analyses were performed using Stata 11 (Stata Corp. 2010). The precision of estimates was presented via the 95% confidence interval (95% CI).

Table 1
Description of study sample.

	Categories	PD cases ($n=167$)		PD controls ($n=2605$)	
		n	% [a]	n	% [a]
Student's sex	Male	73	50.3	1047	42.8
	Female	72	49.7	1400	57.2
Student's age	18	60	41.1	1031	42.0
	19	72	49.3	1302	53.1
	20-25	14	9.6	94	3.8
Mother's age	≤40	6	3.6	94	3.6
	41–50	140	83.8	2187	87.0
	51–60	7	4.2	110	4.2
	60+	14	8.4	214	8.2
Father's age	≤40	4	2.4	31	1.2
	41–50	138	82.6	2154	82.7
	51–60	10	6.0	168	6.5
	60+	15	9.0	252	9.7
Maternal PD	Yes	37	49.3	111	8.4
	No	38	50.7	1207	91.6
Paternal PD	Yes	39	58.2	127	9.8
	No	28	41.8	1168	90.2
	Range	$\bar{x}$	S.D. [b]	$\bar{x}$	S.D. [b]
Rejection	16, 149	82.5	20.6	67.2	14.8
Emotional warmth	14, 135	85.1	18.3	88.0	17.1
Over protection	13, 119	74.1	15.1	63.8	12.4

[a] Due to rounding, the percentages may not always add up to 100.0%.
[b] S.D., standard deviation.

3. Results

Table 1 presented the numbers of parental PD and proportions among PD students and non-PD students. A greater proportion of parental PD was found among PD students compared to non-PD students (e.g. 49.3% among PD students vs. 8.4% among non-PD students for maternal PD; 58.2% vs. 9.8% for paternal PD). The EMBU scores were higher for parental rejection and over-protection; lower for emotional warmth among PD students compared to non-PD students.

Table 2 presents the results from stratified analysis. Among students with and without parental PD, there were robust associations between parenting and PD. Parental rejection and over-protection were found to be associated with higher occurrence of PD, and emotional warmth with lower occurrence of PD. Further analysis found the emotional warmth-PD association was only present for maternal influences and among students without parental PD.

Parental PD was found to moderate the parenting–PD associations. For parental rejection and over-protection, stronger associations were found for students with parental PD compared to students without PD. For example, one unit increment in the EMBU over-protection score was