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Age and remission of personality pathology in the psychotic disorders compared to mood and/or anxiety disorders

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Abstract

In order to explore age-related differences in personality pathology between psychotic disorder (PSD) and mood and/or anxiety disorder (MAD) among psychiatric outpatients, 2,354 subjects were sampled randomly from outpatients in Shanghai and divided into two groups: PSD (N=951) and MAD (N=1403). Dimensional scores for personality disorder (PD) traits were assessed by using a self-reported personality diagnostic questionnaire (PDQ⁴⁺). Significant age differences were observed in most of the PD traits in MAD patients. Cluster B and C PD traits displayed an apparent decrease with age in MAD group, but such decline trend was not evident in PSD group. In both groups, the decline of self-reported Cluster A PD traits were less visible than the other clusters. Age-related mellowing of some PD traits such as “dramatic, erratic, anxious” occurred primarily in MAD patients, but whether those PD traits in PSD patients or “odd, eccentric” PD traits in both groups seem to be maintained and less modified by aging.

Keywords

age bias; personality disorders; clinical surveys; self report

Introduction

Personality disorder (PD) is encountered generally in clinical practice especially those of mental health professionals. Research in U.S. psychiatric clinical settings has shown that at least 50% of patients have a PD [1]. Though many related studies [1-4] report different concrete rates the conclusions reached by most studies hold that PD and Axis I diagnosis have quite high comorbidity. Since the introduction of the DSM-III multiaxial diagnostic system in 1980 (American Psychiatric Association, 1980), numerous studies have demonstrated that comorbid axis II PD has been associated with poor treatment response and long-term outcome of Axis I disorder [5-8], whereas the influence of the presence of Axis I

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disorder on the features of stability and endurance in personality psychopathology across the lifespan received little attention. Few studies have addressed the specific issue that Axis I disorder may increase or decrease risk for the stability of PD, and a limited number of studies have yielded inconsistent results [9, 10].

Although PDs are defined as stable and enduring patterns in DSM, most studies of PD and aging suggest that PD traits remit with age [10], particularly those with dramatic, emotional, or erratic PD features [11]. Age seems to be one of the important confounding factors of PD traits. Some studies have compared the prevalence of PDs in younger and older adults in community samples [12-14]. The results suggested that PDs are more prevalent among younger adults than older adults. Decline in PDs traits was also observed from early adolescence to adulthood among college students [15]. In clinical samples of psychiatric outpatients, a decrease in the prevalence rate of PD across age was found although the diagnostic assessment measures and Axis I diagnoses were different. [16]. Kenan and colleagues assessed 790 psychiatric inpatients across three age groups: 20-39, 40-59, and 60+. Older patients groups received significantly less diagnoses of borderline PD and mixed PD [17]. In short, the overall trend indicates that PD traits mellow as people age.

It has long been recognized that certain personality traits predispose individuals to developing Axis I disorders. However, the onset of mental disorder may also have effect on personality (The scar hypothesis discussed by Andersen in 2011 [18]). Fanous et al. (2007) [19] examined the interaction between major depression and neuroticism based on a sample of male twins, and found that major depression may have a direct causal effect on neuroticism. Both literatures [20, 21] and clinical experiences suggest that the stability and the course of PSD and MAD were quite different. Therefore, we suppose that the trajectory of PD traits across age may differ from a typical trajectory in the presence of co-occurring Axis I disorders that share similar clinical characteristics. On the contrary, PD traits may disappear or change when Axis I disorder share different clinical characteristics. For instance, in patients with schizophrenia and comorbid emotional or dramatic traits (borderline, histrionic PD), PD traits may disappear or develop odd or eccentric manifestations such as (paranoid, schizoid, and schizotypal PD). However, there are a few clinical comparative studies, which have examined whether the age-related changes in PD traits are similar in PSD or MAD patients. Further information on the distribution by age and PD traits of different Axis I pathology groups can hint at patterns of stability and change in PD traits.

In order to explore the difference in age-related changes in PD traits among psychiatric outpatients, the present study therefore tried to investigate the age distribution and self-reported PD traits according to DSM-IV Axis II classification in two large diagnosis-related clinical samples. The primary hypothesis the study set out to test was that: the distribution of cluster A PD (odd or eccentric) traits was expected to show the greater age-related change in those patients diagnosed with MAD (i.e. depression, phobia) than PSD (i.e. schizophrenia), as well as cluster B and C PD traits was expected to show the greater change with aging in patients with PSD than MAD.

Method

Participants

The subjects were outpatients coming for medical treatment from May 2006 to October in psycho-counseling clinic and psychiatric clinic in Shanghai. This was a cross-sectional study of the incidence of PD in the population of Chinese clinical patients [22-24]. 3402 subjects were randomly sampled from the mental health service setting. Only 3075 subjects were included in the study. A self-reported questionnaire was administered to gather information on DSM-IV PDs. The overall response rate was 90.4%. For those of 327 (9.6%) subjects who excluded from the study, 54 were declined to participate for 33 excused for lack of time, others excused for feeling useless and so on. A comprehensive description of the subject characteristics, inclusion criteria and sample procedure is provided in previous publications [22-24]. According to the inclusion criteria, subjects were excluded from the study for presence of serious or acute psychotic symptoms, therefore those outpatients included were in a period of stability, steady symptoms, with a degree of insight.

The present report is based on the 2354 subjects with a formal psychiatric diagnosis of PSD or MAD. The sample was split into two groups based on their clinical diagnosis (PSD group, MAD group). The mood disorder and anxiety disorder subjects were considered as a group because overwhelming clinical evidence [25, 26] showed that depression and anxiety frequently coexist in the same individual, either concurrently or at different times. Of the 951 PSD group subjects, the most frequent diagnoses was schizophrenia (89.5%). Of the 1403 MAD group subjects, the most frequent diagnoses was depression (45.7%), panic disorder and/or generalized anxiety disorder (20.4%), obsession (10.9%). There were no significant differences between clinical diagnosis groups in the sex percentage and the percentage of patients having higher educational level. There is a significant difference between clinical diagnosis groups in age ($t(2353, n=2354)=-2.674, p=0.008$) and the percentage of self-reported character of extroversion ($\chi^2(2, n=2354)=67.506, p<0.001$). Frequency counts for both groups along with selected demographic characteristics are presented in Table 1.

Instruments for Investigations

Personality Diagnostic Questionnaire fourth edition plus (PDQ⁴⁺) [27-29] is a self-report, true/false questionnaire that yields personality diagnoses consistent with the DSM-IV diagnostic criteria for the axis II PD disorders. PDQ⁴⁺ was back translated into Chinese by an experienced bilingual psychologist. Estimates of reliability and validity in the Chinese population were well within an acceptable level [30, 31]. The PDQ⁴⁺ is mainly designed to assess the 10 PDs included in DSM-IV. It takes approximately 20-30 minutes to complete the questionnaire. Respondents were asked to think about how they had tended to feel, think, and act over the last several years when responding to the individual items. The PD dimensional scores were also classified as Cluster A: paranoid (7-items), schizoid (7-items), and schizotypal (9-items) PD traits; Cluster B: borderline (9-items), histrionic (8-items), narcissistic (9-items) and antisocial (8-items) PD traits; and Cluster C: avoidant (7-items) dependent (8-items), and obsessive-compulsive (8-items) PD traits. For this study, only

these 10 PDs were used. The number of positive responses within each PD category and a total score within each cluster as an index of personality disorder traits.

Criteria of Diagnoses

Primary clinical diagnosis was assessed according to the Chinese Classification of Mental Disorders Third Edition (CCMD-3) [32] by outpatient's attending psychiatrists. The categories of CCMD-3 were partly based on the DSM-IV and ICD-10, and most of the diagnostic criteria of PSD (including schizophrenia, paranoid mental disorders, schizoaffective psychosis), mood disorder (including mania, bipolar disorder, depression and dysthymia) and anxiety disorder (including phobia, panic disorder, generalized anxiety disorder, obsession) are identical or similar to the international classifications.

Methods of Survey

The study group consisted of 2 clinical psychiatrists, 3 senior nurses, and several staff members of related departments and doctors of outpatients unit of Shanghai Mental Health Center. Before the research formally started, we carried out preliminary experiments for two weeks to familiarize with the process and criteria of the whole operation. The group's key members studied and trained for about a week so as to ensure the compatibility among the evaluators in understanding and operation in using the PDQ⁴⁺.

Staff members of the hospital's outpatient unit issued letters of advice to the outpatients on that day according to their order of registration, and with the proportion of 10:1 (psycho-counseling clinics) / 20:1 (psychiatric clinics). Nurses organised the patients for screening, who were ushered into a quiet screening room. The content and objective of the study were explained to them by executive nurses especially assigned for the project. After obtaining the patients' informed consent, they completed the self-assessment questionnaires at the direction of the executive nurses. The executive nurses were tasked with the duty to check the facts and leaks and input the data into the computer for timely marking. In order to reduce the effect that subjective deviation had on the result of PDQ⁴⁺ as much as possible, the clinical diagnoses of all participants were made by the attending psychiatrists, who were unaware of the results of the personality evaluation of the patients.

Data analysis

The data was analyzed using the Statistical Package for the Social Sciences program, version 16.0 for Windows (SPSS Ltd., USA). Means (M) and standard deviations (SD) were calculated for continuously distributed variables. The Chi-square test and independent-samples *t*-test were used to compare the data for different groups, as applicable. The significance level was chosen as $P < 0.05$ (two-tailed). The mean score of cluster A, B and C PD traits and age data were transferred to a spreadsheet program (Excel; Microsoft, USA) for further graphically displaying the PD traits distributions for the age groups. For cluster of PD traits and age groups, trend lines were plotted by using Excel (Excel allows the linear trend line be created by clicking on the created diagram of the data set using the command "Add trend line".), and equations and associated R^2 value were calculated by linear regression function with default parameters in Microsoft Excel 2003. The decline slopes of trend lines were compared between PSD and MAD by SPSS[33].

Results

In order to provide an overall description of age-related differences in PD traits, subjects were categorized by PD dimensional scores into low traits (L-traits) and high traits (H-traits) in the ten PD dimensions. Age was examined as a continuous variable. In the MAD patients significant age differences were found for “schizotypal”, “histrionic”, “narcissistic”, “borderline”, “antisocial”, “avoidant”, “dependent” and “obsessive-compulsive” PD traits between the two subgroups, and the mean age of the H-traits subjects is lower than the L-traits group. There were no significant age differences for the two subgroups in the PSD patients, except for “schizotypal traits” (Table 2).

We explored the relationships between the PD dimensional scores and age among subjects in PSD group and MAD group. These results are presented in figures 1 through 3. The Y-axis indicates the mean of cluster A, B and C PD traits while age was plotted on X-axis. The sample was divided into 10 groups of roughly equal size. For the PSD and MAD groups, the graphs illustrate a different pattern of distribution across 18-60 years for all age groups.

Overall, the cluster of PD traits is declining, and they decline with age. However, the rate of decline is not consistent across PSD and MAD. PD traits drop more rapidly for MAD than for PSD. A nearly linear trend line in the MAD group suggests a decrease of PD traits with age. A linear regression of the two dimensions yields r-squared value of 0.636, 0.899, 0.911 for cluster A, B, C in MAD group, indicating that PD traits in MAD subjects are linearly related to the age. But the PSD group does not fit the linear model well. As the MAD slopes were compared with the PSD, the significance of observed differences in the change (slopes) was found in cluster B and C. On the Cluster A PD traits (Fig. 1), the decline of PD traits in both groups were less visible than other clusters, and there were no significant difference in slopes between the PSD and MAD ($P=0.228$). Cluster B and C PD traits (Fig. 2 and 3) were more likely to decrease gradually, especially for the MAD group. From 18 to 60 years old, the decline (slope) for PAS was significantly less than that for MAD (Fig. 2 $P=0.003$, Fig. 3 $P=0.006$). Cluster B and C PD traits all showed age differences, such that results in younger individuals were higher in these traits than older individuals. However, the average levels of Cluster B PD traits were lower among older subjects in MAD group compared with those in the PSD group, while there was little difference in average levels of Cluster C PD traits among older individuals.

Discussion

The initial data from this study fills an important gap in the literature about the pattern of age distribution in PD traits over Axis I pathologies. We focus on the possible trend of a relationship between age and PD in outpatients with PSD or MAD. As expected, our results provided further support that a general age-related decline of PD traits for some types of the DSM-IV PDs, especially the Cluster B PD categories, schizotypal PD, avoidant PD, and dependent PD in those patients with MAD. In keeping with both previous cross-sectional [17, 34] and longitudinal studies [15, 35, 36], Engels et al. (2003) [37] who found that older groups showed more mature characteristics (paranoid, schizoid, obsessive) and fewer high-energy disorder characteristics compared to the younger groups. Our results also indicated

that some “immature” or “high-energy” PD types (Cluster B PD categories) may become mellow as they grew older. Unsurprisingly by contrast, a higher frequency of “mature” PDs traits were reported in the older (Kernberg's “Maturation Hypothesis”[38]), and our results partly support this impression.

Some interesting correlations about the different patterns of age-related decline of PD traits between two clinical groups were observed from this study. An approximate linear decline relation between age and “immature” PD traits in MAD patients may be explained by the change of personal energy and social experiences. With increasing age, the decreased energy and healthy social contacts may inhibit or develop the PD traits, or alternatively, those PD traits change to other forms, which are different the way we perceive personality characteristics. Compared to PSD patients, the quality of life and social function for MAD patients appeared well maintained and they are able to integrate into society at an acceptable level. This difference may be one of the reasons why Cluster B PD traits reduce with age more rapidly in MAD patients than in PSD patients. Also, the death of a significant proportion of mood disorder patients displaying ‘dramatic-erratic’ traits and ‘risk-taking’ behavior earlier in life may also explain this result. In some studies, the co-occurrence of major depressive disorder and borderline PD was the strongest predictor of suicidal behavior as well as increased number and seriousness of suicide attempts, attempts of higher lethality, or suicide completion [39, 40]. Another alternative explanation for the decline is that the presentation of PD traits may be changed by some natural development or maturation process and hence remain undetected by diagnostic criteria that are not adequately in older adults [41].

PD traits, even Cluster B PD traits, seem to decline relatively less in outpatients with PSD based on self-administered PD assessments and thus do not lend support to our hypothesis. A non-linear relationship has been observed between PD traits and age among those patients. What could account for this pattern of age distribution in PD traits in PSD patients? There are several possible explanations for this phenomenon: 1) as mentioned above, compared to MAD patients, PSD patients became socially isolated and alienated from others, have had worse functioning and were less likely to engage in social activities and had higher levels of maladjustment in social relationships [42]. Therefore, isolation may interrupt the development of normal maturation processes and the rate of this decline may diminish in PSD patients over the lifespan. 2) From figures 2 and 3, it is observed that PSD group had a lower Cluster B and C PD dimensional scores than the MAD group before the age of 30. A growing number of comparative studies across the affective and non-affective psychoses have shown fairly consistently that the degree of cognitive impairment in schizophrenia is worse than in affective disorder [43]. As a result, the cognitive impairment and negative symptoms or even antipsychotic medications following or resulting from the presence of schizophrenia may decrease energy and inhibit behavioral expressions of Cluster B or C PD traits in younger adults.

Our results show that cluster A PD traits are generally more stable than Cluster B and C PD traits in both groups, and almost no decline trend was observed for the PSD group. Some criteria constituting Cluster A PD such as withdrawal, affect-constricted and indifference might exist through the inherent nature in the process of aging. Worse still, several studies

observed that schizoid, paranoid and schizotypal [44] PD traits increased with age. The presence of Axis I disorders may minimally affect the progression of Cluster A PD traits. Such PDs are supposed to be part of the schizophrenia spectrum disorder, which related to Axis I schizophrenia [45], are more often involved in biological and inherited factors.

Although we provide strong exploratory evidence that showed different patterns of age-related distribution in PD traits in two clinical groups, there are several limitations to this study. Cross-sectional design and self-report instruments are important issues in PD testing, and no conclusions may be drawn as to whether aging or Axis I disorder has a causal effect on the growth or decline of the PD traits. There was a potential cohort effect that might yield clues as to the reason for the decrease of PD traits. The decrease of PD traits with increasing age might not only reflect the natural course of the disease, but might well be due to an increase amongst subjects of old generation who were born before the 1980s. The presence of Axis I disorder may potentially overshadow the PD assessment in spite of the test-retest reliability of the PD instrument used in the present study (PDQ⁴⁺) which was high.

Although we emphasized on the inclusion criteria of participants in this study in a period of stable phase, the minor difference of the severity of Axis I disorder between younger and older might be potential confounders and effects in interpreting our findings. Personality disorder in this paper was measured only on the basis of a self-report instrument, in which clinical diagnoses of DSM-IV/SCID PDs were not present. Concerned about this limitation we would like to describe PD traits instead of PD in the paper, which means that our findings should be interpreted with caution for PD patients. Further, the Chinese subjects of this study were outpatients with typically comorbid Axis I disorders, which could limit the generalizability of our findings. However, the strength of this study lies in large-scale random sampling and assessment of the whole range of PD criteria scores according to DSM-IV in a representative clinical population which specifically aimed at exploring age-related differences in the PD traits between two clinical groups. Further research is needed to examine the stability of DSM PD Diagnostic Criteria used in China by conducting the longitudinal study to follow up those outpatients and investigate more details of Axis I disorder which are potential confounders assessed with regularly administered questionnaires.

To summarize, our findings provide clues for age-related softening of some PD traits such as “dramatic, emotional, or erratic” and “anxious or fearful” in MAD patients, but with very little changes in PSD patients. While the “odd or eccentric” PD traits, on the other hand, seem to be influenced less by aging in both groups. Its use of the different trajectory of PD traits across age may offer a framework from which to develop hypotheses of interaction between PDs and Axis I disorder for future research, as well as exploring the innovative and a different kind of clinical PD interventions for both groups. Future longitudinal studies of stability of PD traits and correlate with axis I disorder, particularly in clinical patients, will help to further clarify the course of PD and continue to provide clues that may lead to more effective and practical PD diagnosis.

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Note, Percentile age groups: 0-10(18~21 years), 10-20(22~23 years), 20-30(24~25 years), 30-40(26~27 years), 40-50(28~30 years), 50-60(31~33 years), 60-70(34~37 years), 70-80(38~42 years), 80-90(43~48 years), 90-100(49~60 years). The trend can be seen directly through the distribution of points or with the addition of a linear trend line (Excel provides the trendline equation and R-squared value in the chart.).

Fig. 1.

Cluster A PD traits and age

Note, Percentile age groups: 0-10(18~21 years), 10-20(22~23 years), 20-30(24~25 years), 30-40(26~27 years), 40-50(28~30 years), 50-60(31~33 years), 60-70(34~37 years), 70-80(38~42 years), 80-90(43~48 years), 90-100(49~60 years). The trend can be seen directly through the distribution of points or with the addition of a linear trend line (Excel provides the trendline equation and R-squared value in the chart.).

Fig. 2.
Cluster B PD traits and age

Fig. 3.
Cluster C PD traits and age

Table 1

Sample Sizes and Demographic Characteristics for PSD Group and MAD Group

	PSD group (N=951)	MAD group (N=1403)	P Value
Age($M \pm SD$)	31.47 $\pm$ 9.78	32.60 $\pm$ 10.22	0.008 ^a
Gender(N, %)			
Male	423, 44.48%	605, 43.12%	0.425 ^b
Female	528, 55.52%	798, 56.88%	
Education(N, %) ^c			
Low	186, 19.56%	290, 20.67%	0.434 ^b
High	765, 80.44%	1113, 79.33%	
Description of character (N, %)			
introverted	483, 50.79%	475, 33.86%	<0.001 ^b
middle	337, 35.44%	658, 46.90%	
extroverted	131, 13.77%	270, 19.24%	

Note, A two-tailed $P < 0.05$ was considered significant^a independent-samples t-test^b χ^2 test^c Low educational level: a junior middle school graduate (the 9-year compulsory education). High educational level: a senior high School graduate or above.

Table 2

Age difference between the high and low PD traits groups in PSD and MAD subjects

PSD patients (N=951)			MAD patients (N=1403)	
Cluster A				
PAR (7)	Low (<4) (N=623)	High (4) (N=328)	Low (<4)(N=861)	High (4) (N=542)
Age: <i>Mean(SD)</i>	31.4 (9.80)	31.6 (9.76)	33.0 (10.46)	32.0 (9.81)
S'OID, (7)	Low (<4) (N=759)	High(4) (N=192)	Low (<4) (N=1070)	High(4) (N=333)
Age: <i>Mean(SD)</i>	31.7 (9.79)	30.6 (9.72)	32.7(10.18)	32.2 (10.36)
S'TYP, (9)	Low (<5) (N=584)	High(5) (N=367)	Low (<5) (N=920)	High(5) (N=483)
Age: <i>Mean(SD)</i>	32.0(9.86)	30.6(9.60) *	33.4(10.21)	31.1(10.07) ***
Cluster B				
HIS,(8)	Low (<5) (N=659)	High(5) (N=292)	Low (<5) (N=930)	High(5) (N=473)
Age: <i>Mean(SD)</i>	31.5 (9.83)	31.3 (9.68)	33.4 (10.41)	31.0 (9.66) ***
NAR, (9)	Low (<5) (N=694)	High(5) (N=257)	Low (<5) (N=986)	High(5) (N=417)
Age: <i>Mean(SD)</i>	31.7 (9.82)	30.8 (9.65)	33.1 (10.39)	31.4 (9.73) **
BOR, (9)	Low (<5) (N=583)	High(5) (N=368)	Low (<5) (N=731)	High(5) (N=672)
Age: <i>Mean(SD)</i>	31.6 (9.72)	31.3 (9.90)	34.5 (10.53)	30.5 (9.44) ***
ANT, (8)	Low (<4) (N=773)	High(4) (N=178)	Low (<4) (N=1200)	High(4) (N=203)
Age: <i>Mean(SD)</i>	31.6 (9.85)	31.0 (9.50)	33.0(10.29)	30.2 (9.48) ***
Cluster C				
AVO, (7)	Low (<4) (N=447)	High(4) (N=504)	Low (<4) (N=594)	High(4) (N=809)
Age: <i>Mean(SD)</i>	32.0 (10.02)	31.0 (9.55)	33.9 (10.67)	31.7 (9.78) ***
DEP, (8)	Low (<5) (N=661)	High(5) (N=290)	Low (<5) (N=939)	High(5) (N=464)
Age: <i>Mean(SD)</i>	31.3 (9.70)	31.8 (9.97)	33.4 (10.33)	31.1 (9.84) ***
OCD, (8)	Low (<4) (N=477)	High(4) (N=474)	Low(<4) (N=577)	High(4) (N=826)
Age: <i>Mean(SD)</i>	31.6 (9.73)	31.3 (9.84)	33.3 (10.42)	32.1 (10.06) *

Note, independent-samples t-test

PAR, Paranoid PD; S'OID, Schizoid PD; S'TYP, Schizotypal PD; HIS, Histrionic PD; NAR, Narcissistic PD; BOR, Borderline PD; ANT, Antisocial PD; AVO, Avoidant PD; DEP, Dependent PD; OCD, Obsessive-compulsive PD

PAR, Paranoid (7): 7-item (true/false), consists of the diagnostic criteria for Paranoid PD that are listed in the DSM-IV High PD traits (4): A score of 4 or higher is highly suggestive of the diagnosis of Paranoid PD (according to the DSM-IV). The other PDs were as same.

*
P<0.05

**
P<0.01

P<0.001