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DSM-III-R Personality Disorders in Outpatients with Non-Bipolar Depression: The Frequency in a Sample of Japanese and the Relationship to the 4-Month Outcome under Adequate Antidepressant Therapy

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Summary. We investigated the frequency of personality disorders (PDs) and the relationship between the presence of PD and the 4-month outcome of depression under adequate antidepressant therapy in a Japanese sample of 96 outpatients with non-bipolar major depression. The diagnosis of PD was made using a structured interiew method (the Structured Clinical Interview for DSM-III-R Personality Disorders) and after severe depressive symptoms were reduced. Any one kind of PD was found in 54.2% of the sample. The most frequent was avoidant (35.4%), obsessive-compulsive (22.9%), narcisstic (18.8%), and dependent (16.7%) PDs. The frequencies of these PDs in our study, except narcisstic PD, were about the same as those reported in previous studies with a matched setting for the PD diagnosis. Compared with patients without PD, a worse outcome was found in patients with PD, especially patients with multiple PDs from multiple PD clusters. There was no evidence that a specific PD or PD cluster especially worsens the outcome of depression.

Key words: Major depression – Personality disorders – Frequency – Treatment outcome

Increasingly, research interest in concomitant personality disorders (PDs) in patients with mental disorders has been raised. One reason for this is the multi-axial diagnostic system of the Diagnostic Statistical Manual of Mental Disorders, Third Edition (DSM-III) [5] or the revised version of this (DSM-III-R) [6], which classifies PDs under the Axis II independent from other major (Axis I) mental disorders. Another reason is increasing reliability of diagnosis of PDs by using structured interview methods such as the Structured Interview for DSM-III Personality Disorders (SIDP) [20, 30], Personality Disorder Examination (PDE) [18], and the Structured Clinical Interview for DSM-III-R Personality Disorders (SCID II) [28, 29].

Regarding PDs in patients with unipolar depression, a large number of papers have been already published [2–4, 8–13, 15–17, 21–27, 31–33, 35–36]. One issue of major interest in most of them is the frequency of PDs in those patients. However, results obtained in these studies are quite varied. This would be because in the studies, different instruments for the diagnosis of PDs (a structured interview or a quetionnaire method) were used, the diagnoses were made at different times (during acute depressive illness or after severe symptoms were reduced), and/or subjects in different treatment conditions (inpatients or outpatients) were examined. For example, it is well-known that the presence of severe depressive symptoms greatly influences the diagnosis of PDs and the frequency examined during acute depressive illness would be much higher than after severe symptoms are reduced [15–16]. In addition, the facts that the diagnosis using a questionnaire method is much more sensitive to the state of depression compared with using a structured interview method [36], and that the frequency of PDs in inpatients is much different from that in outpatients [17] have been reported previously. In such research situations, a careful comparison of the frequencies reported in previous studies, with attention to the above possible effects on the diagnosis, is needed. Such an effort might reach a consensus reagrding the frequency in the future.

Another important issue dealt with in previous studies is the relationship between PDs and clinical variables in depressive patients. Among such variables, the most interesting and the most clinically important is treatment outcome of depression. That the presence of PDs worsens response to various treatments has been replicated in many studies [8–10, 21–23, 25, 27, 31, 35]. However, here emerges a question to which little attention has been paid, that is wheter each specific PD or

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each of three PD clusters, recommended in DSM-III and DSM-III-R, is related in the same way to poorer treatment outcome of depression or not. The fact that a patient frequently has 2 or more (multiple) PDs and has PDs of multiple clusters makes the question more complicated. So far only Pfohl et al. [21–22] have carefully examined the question, taking into account overlaps of PDs and Pd clusters in a patient. They have suggested that patients which PDs from multiple clusters show especially poorer treatment outcome, compared with patients with PD from cluster B only or from cluster C only, who are not significantly different rom patients without PD.

The aim of this study also lies in these two issues. First, it reports the frequency of DSM-III-R PDs in patients with non-bipolar depression and compares this result and previous studies, with careful attention to the possible effects on the diagnosis of PDs. Since there has been no published study concerning PDs in depressive patients in Japan, a possible cultural difference in the frequency between Western countries and Japan is discussed. Second, it describes in those patients the relationship between the presence of concomitant PDs and the 4-month outcome under adequate antidepressant therapy. At this time, special attention is paid to the possible difference in such relationship between different specific PDs or between different specific PD clusters.

Subjects and Methods

Out of new outpatients who sought help at the Psychiatric Department of Niigata City General Hospital from September 1990 to August 1991, those diagnosed with a primary major depression according to DSM-III-R [6] were, after obtaining informed consent, consecutively considered as subjects of this study. For the diagnostic procedure, the Structured Clinical Interview for DSM-III-R Patient Version (SCID-P) [29] was used. Patients younger than 21 years or older than 70 years, and those showing obvious brain organic syndrome or having a history of manic episode or hypomanic episode were exlcuded. Patients with psychotic symptoms were also excluded. The remaining patients ($n = 105$) were followed up prospectively for at least 5 months using the 17-item Hamilton Relating Scale for Depression (HRS) [14], and those whose HRS scores become less than 11 points by February 1992 were entered as the subjects. During this follow-up 9 patients in total dropped out. One patient moved to another city far from our clinic, and 6 patients discontinued our treatment. In addition 2 patients, who were resistant to adequate antidepressant therapy and did not show less than 11 points on the 17 item HRS until the end of February 1992, were excluded from the group. Finally, 96 non-bipolar depressive patients were included in this study.

The demographic and clinical characteristics of these 96 subjects in this study are, together with those of the drop-out cases ($n = 9$), shown in Table 1. Of 96 subjects, 41 (42.7%) were male and 55 (57.3%) were female. The mean age (standard deviation; SD) of all the subjects was 45.0 (12.5) years. Fifteen patients were single, 76 were married, 2 were divorced, and 3 were widowed. No patient was separated. Seven patients had no regular occupation. The mean score (SD) of the 17-item HRS at the first session was 24.9 (7.5). The mean onset age (SD) of major depression was 40.0 (14.0) years. Of the subjects, 62 (64.6%) had no history of depression, while 16 (16.7%), 5 (5.2%), 1 (1.0%), 2 (2.1%), and 10 (10.4%) had experienced 1, 2, 3, 4, and 5 and more previous depressive episodes respectively. The mean number (SD) of previous depressive episodes in all the subjects was 1.7 (5.4). There was no significant difference in these demographic or clinical characteristics between the subjects and the drop-out cases.

Table 1. Demographic and clinical characteristics of subjects and drop-out cases

	Subjects		Drop-out		Test
N	96		9		
Male (%)	41	(42.7)	2	(22.2)	
Female (%)	55	(57.3)	7	(77.7)	N.S.
Marital status, *n* (%)					
Single	15	(15.6)	3	(33.3)	N.S.
Married	76	(79.2)	5	(55.6)	N.S.
Separated	0	(0.0)	0	(0.0)	
Divorced	2	(2.1)	1	(11.1)	
Widowed	3	(3.1)	0	(0.0)	
Occupation Without regular occupation, *n* (%)	7	(7.3)	2	(22.2)	N.S.
Age, mean (SD), years	45.0	(12.5)	47.7	(12.9)	N.S.
17-item Hamilton rating scale for depression, mean (SD)	24.9	(7.5)	23.3	(3.5)	N.S.
Onset, mean (SD), years	40.0	(14.0)	40.2	(10.0)	N.S.
N of previous depressive episodes					
Mean (SD)	1.7	(5.4)	2.1	(3.2)	N.S.
Distribution (%)					
0	62	(64.6)	5	(55.6)	
1	16	(16.7)	2	(22.2)	
2	5	(5.2)	1	(11.1)	
3	1	(1.0)	0	(0.0)	
4	2	(2.1)	0	(0.0)	
5 and more	10	(10.4)	2	(22.2)	

Test: The *t*-test or the chi-square test was used

For the PD diagnosis the SCID II [28, 29] was used. Either the first or second author performed this instrument for each patient. The timing of PD diagnosis is a dilemma for researchers in this area. If the diagnosis is made after the complete remission of depression, researchers are able to avoid the influence of depressive symptoms on the diagnosis. Because of this procedure itself, however, the possibility that many patients relatively resistant to antidepressant therapy are excluded from the subjects would emerge. To provide a solution to such a dilemma, the diagnosis of DSM-III-R PDs in this study was made after at least 2 months of treatment and after the HRS score was reduced to less than 11 points. Although the PD diagnosis in this study is free from severe depressive symptoms, there is a possibility that it may be slightly influenced by mild depressive symptoms. By using the above criteria for the timing of PD diagnosis, there were however, only 2 drop-out cases through resistance to antidepressant therapy in this study.

The prospective follow-up procedure in this study has a naturalistic design. Although all the subjects were treated with adequate antidepressant medication, the antidepressant used for each patient was not controlled. Either Maprotiline (75–200 mg), Miancerine (30–80 mg), Setiptiline (3–8 mg), or Sulpiride (150–300 mg) was given to each patient together with a small dose of benzodiazepines or/and levomepromazine. The prospective follow-up study, which dealt with the effect of PDs on treatment outcome of outpatients with major depression, has been carried out only few times [23, 25, 27]. The outcome evaluation in these studies has been made either after a 4-month or a 6-month treatment. Based on this, we chose to make the evaluation after a 4-month treatment with adequate antidepressant. The criteria used for the judgment of the 4-month outcome was as follows: 1) less than 6 points in the 17-item HRS, and 2) a full recovery in social functions at the 16th

Table 2. Frequency of personality disorders in 96 non-bipolar depressive patients

	All subjects $N = 96$ Age = 45.0 ± 12.5 years n (%)	Differences between sexes		Differences between age groups	
		Male $N = 41$ Age = 44.2 ± 9.5 years n (%)	Female $N = 55$ Age = 45.5 ± 14.3 years n (%)	Younger $N = 39$ Age = 32.6 ± 6.5 years n (%)	Older $N = 57$ Age = 53.4 ± 7.5 years n (%)
Paranoid	11 (11.5)	3 (7.3)	8 (14.5)	8 (20.5)	3 (5.3)*
Schizoid	7 (7.3)	5 (12.2)	2 (3.6)	2 (5.1)	5 (8.8)*
Schizotypal	2 (2.1)	0 (0.0)	2 (3.6)	2 (5.1)	0 (0.0)
Antisocial	2 (2.1)	2 (4.9)	0 (0.0)	1 (2.6)	1 (1.8)
Borderline	8 (8.3)	3 (7.3)	5 (9.1)	7 (17.9)	1 (1.8)
Histrionic	10 (10.4)	4 (9.8)	6 (10.9)	9 (23.1)	1 (1.8)**
Narcissistic	18 (18.8)	9 (22.0)	9 (16.4)	12 (30.8)	6 (10.5)*
Avoidant	34 (35.4)	15 (36.6)	19 (34.5)	13 (33.3)	21 (36.8)
Dependent	16 (16.7)	7 (17.1)	9 (16.4)	9 (23.1)	7 (12.3)
Obsessive-compulsive	22 (22.9)	12 (29.3)	10 (18.2)	7 (17.9)	15 (26.3)
Passive-aggressive	8 (8.3)	4 (9.8)	4 (7.3)	5 (12.8)	3 (5.3)
Cluster A	18 (18.8)	8 (19.5)	10 (18.2)	11 (28.2)	7 (12.3)*
Cluster B	21 (21.9)	11 (26.8)	10 (18.2)	15 (38.5)	6 (10.5)**
Cluster C	47 (49.0)	22 (53.7)	25 (45.5)	17 (43.6)	30 (52.6)
Any personality disorder	52 (54.2)	23 (56.1)	29 (52.7)	22 (56.4)	30 (52.6)

Age: Mean age ± SD (years)
Younger age group: subjects at age of 21–40 years
Older age group: subjects at age of 41–70 years
* $P < 0.05$; ** $P < 0.01$ (comparison between groups)

week after the beginning of the treatment, and 3) no sign of recurrence of depression during the 4 weeks after the judgment with regard to the above first and second criteria. Patients who met all of these three criteria were judged remitted. The outcome evaluation for each patient was made by one of the authors, who were blind to the PD diagnosis of the patient.

As a separate study, the first and second authors investigated the interrater reliability of SCID-P and SCID II used in this study. Each of 20 depressive patients chosen randomly from our department were interviewed by both the two raters independently using the instruments. There was 100% agreement between the raters in diagnoses of major depression using SCID-P. The agreement between the raters in diagnoses of PDs using SCID II was 97% (32 vs. 33 PDs). The kappa coefficient [7] for the presence of any PD was 0.91.

Statistical analyses were carried out using the chi-square test, and Fisher's exact test if the figure in a cell was too small ($n < 5$).

Results

Frequency of Personality Disorders

The frequency of DSM-III-R PDs found in the subjects are shown in Table 2. In this table, comparisons of the frequencies between sexes and between younger (21–40 years) and older (41–70 years) age groups are also demonstrated.

Of 96 subjects, 52 (54.2%) had at least one PD of some kind. Frequent diagnoses were: avoidant ($n = 34$, 35.4%), obsessive-compulsive ($n = 22$, 22.9%), narcissistic ($n = 18$, 18.8%), and dependent ($n = 16$, 16.7%) PDs. Compared with these, paranoid ($n = 11$, 11.5%), histrionic ($n = 10$, 10.4%), borderline ($n = 8$, 8.3%), and schizoid ($n = 7$, 7.3%) PDs were less frequent. Few patients had schizotypal ($n = 2$, 2.1%) or antisocial ($n = 2$, 2.1%) PDs. In terms of PD clusters, the most frequent was cluster C ($n = 47$, 49.0%), and then cluster B ($n = 21$, 21.9%) and cluster A ($n = 18$, 18.8%).

There were significant overlaps of PDs in the subjects. Of 52 patients with any PD, 35 (67.3%) had 2 or more PDs (multiple PDs). Only 17 had a single PD. (Nine patients with avoidant, 4 with obsessive-compulsive, and 1 each with paranoid, schizotypal, narcissistic, or dependent PD). Overlaps were also frequently found between PD clusters. Only 29 patients (55.8% of 52 with any PD) did not have such an overlap, while the remaining ($n = 23$, 60.5% of 38 with multiple PDs) had PDs from 2 or more clusters. The overlaps between clusters, found in the subjects, are summarized in Table 3.

There was no significant difference between sexes in frequency of any PD, of each specific PD, or of PD in each specific cluster. Between younger and older age groups, there was no significant difference in the frequency of any PD. However, the frequencies of cluster A and B PDs as well as paranoid, histrionic, and narcissistic PDs were significantly higher in the younger age group than in the older age group. The frequency of borderline PD in younger age group was much higher than that in older one, which did not, however, reach a significant level ($P < 0.05$), because of a small number of patients with that PD in this study.

4-Month Outcome under Adequate Antidepressant Therapy

Table 4 shows the 4-month outcome of the subjects. Of all the subjects, 59 were judged remitted at the 16th

Table 3. Overlaps of personality disorder clusters in 96 patients with non-bipolar depression

		Cluster C (+)	Cluster C (−)
Cluster A (+)	Cluster B (+)	11	0
	Cluster B (−)	5	2
Cluster A (−)	Cluster B (+)	7	3
	Cluster B (−)	24	44

week after the beginning of antidepressant therapy, and 37 not remitted. Of 44 patients without PD, 32 (72.7%) were remitted. Compared with this, patients with any PD had significantly worse outcome (51.9% remission). Such effects on the 4-month outcome of concomitant PDs were the strongest if a patient had two or more PDs. Compared with this, patients with one PD showed outcome similar to those without PD. In terms of each specific PD, patients with paranoid, schizoid, borderline, narcissistic, avoidant, dependent, or obsessive-compulsive PD showed worse outcome. Patients with PD in each cluster also had worse response to antidepressant medication compared with patients without PD.

However, the results regarding the outcome of patients with each specific PD or with PD in each cluster might be influenced by the overlap of PDs frequently seen in the subjects. We therefore examined the outcome of patients with a single specific PD and of patients with PD from a single specific cluster. The results were as follows: six (66.7%) of 9 patients with avoidant PD only, 3 (75%) of 4 with obsessive-compulsive PD only, and 15 (62.5%) of 24 with PD from cluster C only were judged remitted. None of these figures did not show significant difference in comparison with patients without PD. The numbers of patients with paranoid PD only ($n = 1$), schizotypal PD only ($n = 1$), narcissistic PD only ($n = 1$) or dependent PD only ($n = 1$) were, as well as the number of those with PD from a single cluster of A or B ($n = 2$ and 3 respectively), too small to obtain a meaningful result. In summary there was no evidence for the effect on outcome of a single specific PD or a single PD cluster.

Table 4. 4-Month outcome of depression and concomitant DSM-III-R personality disorders

	All subjects $N = 96$	Differences between groups	
		Remitted $N = 59$	Not remitted $N = 37$
	n	n (%)	n (%)
Paranoid	11	1 (9.1)	10 (90.9)**
Schizoid	7	2 (28.6)	5 (71.4)*
Schizotypal	2	1 (50.0)	1 (50.0)
Antisocial	2	2 (100.0)	0 (0.0)
Borderline	8	1 (12.5)	7 (87.5)**
Histrionic	10	5 (50.0)	5 (50.0)
Narcissistic	18	6 (33.3)	12 (66.7)**
Avoidant	34	15 (44.1)	19 (55.9)*
Dependent	16	6 (37.5)	10 (62.5)*
Obsessive-compulsive	22	9 (40.9)	13 (59.1)*
Passive-aggressive	8	4 (50.0)	4 (50.0)
Cluster A	18	4 (22.2)	14 (77.8)**
Cluster B	21	9 (42.9)	12 (57.1)*
Cluster C	47	24 (51.1)	23 (48.9)*
Any personality disorder			
One or more PDs	52	27 (51.9)	25 (48.1)*
Two or more PDs	35	15 (42.9)	20 (57.1)**
Only one PD	17	12 (70.6)	5 (29.4)
Without personality disorder	44	32 (72.7)	12 (27.3)

* $P < 0.05$; ** $P < 0.01$ (comparison with patients without personality disorder)

Discussion

Frequency of Personality Disorders in Patients with Non-Bipolar Depression

As is well known, the frequency of PDs in depressive patients may be greatly influenced by the presence of servere depressive symptoms [15–16], the instrument used (a structured interview method or a questionnaire) [22, 24], and the patients' treatment condition (outpatients or inpatients) [17]. In addition, Zimmerman et al. [36] have recently shown that the personality diagnosis, using a questionnaire method, is much more sensitive to the state effects of depression compared with the diagnosis using a structured interview method. With careful attention to these possible effects on the personality diagnosis, we reviewed studies regarding PDs in non-bipolar depressive patients [2–4, 8–13, 15–17, 21–27, 31, 33, 35–36]. Those studies comparable with our result, which dealt with outpatients and used a structured interview method, are shown in Table 5.

To diagnose PDs, all the studies in this table except ours used the criteria of DSM-III, which has been slightly revised in DSM-III-R. However, Morey [19], based on results of 291 patients by using a questionnaire for the PD diagnosis, showed that the diagnostic consistence between DSM-III and DSM-III-R for PDs was significantly ($P < 0.001$) higher than by chance, except for schizoid PD. In addition, Vaglum et al. [32] found that in 97 consecutive non-psychotic patients, the diagnostic consistence for PDs between the two diagnostic systems was high except schizoid, schizotypal and histrionic PDs. These results indicate that a direct comparison of the frequency of PDs between the two diagnostic systems is not impossible, except for schizoid, schizotypal and histrionic PDs.

As shown in this table, the most frequent PDs were very similar between our present study and other previous studies. Avoidant, obsessive-compulsive, and dependent PDs, common in our sample, were also reported to be the most frequent in the other studies in the table. Only one exception was narcissistic PD, which was not frequent in other studies but was in our present study. More surprisingly, the result of Pilkonis et al. [23] where the PD diagnosis was, as in our study, made after severe depressive symptoms were reduced, was quite similar to ours. We compared figures for the frequencies available

Table 5. Frequency of personality disorders in outpatients with non-bipolar depression: a review of studies using the structured interview method for the personality disorder diagnosis

Author (year)	Subjects				Instrument	Frequency of personality disorders (%)													
	N	Sex (% of females)	Age	Timing of PD diagnosis		Any PDs	CLA	CLB	CLC	PR	SZ	ST	AS	BL	HI	NR	AV	DP	OC	PA
Reich et al. (1987) [24]	24	62.5	38.0	Acutely ill	SIDP	50.0	12.5	25.0	41.7	4.2	4.2	8.3	0.0	12.5	20.8	0.0	41.7	20.8	16.7	0.0
Shea et al. (1987) [26, 27]	249	70.0	35.0	Acutely ill	PAF	75.0	20.0	17.0	65.0	18.0	2.0	2.0	2.0	8.0	9.0	1.0	34.0	20.0	39.0	6.0
Pilkonis et al. (1988) [23]	102	74.8	39.8	After remission	PAF	48.0	*15.7		44.1	–	–	–	–	–	–	–	30.4	15.7	18.6	–
Alnaes et al. (1988) [2–4]	97	69.0	35.0	Acutely ill	SIDP	85.6	11.3	22.7	80.4	8.2	1.0	6.2	–	15.5	15.5	2.1	61.9	53.6	20.6	11.3
This study	96	57.3	45.0	HRS < 11	SCID II	54.2	18.8	21.9	49.0	11.5	7.3	2.1	2.1	8.3	10.4	18.8	35.4	16.7	22.9	8.3

The following abbreviations are used in this table. SIDP: the structured interview for DSM-III personality disorders; PAF: the personality assessment form; SCID II: the structured clinical interview for DSM-III-R personality disorders; PD: personality disorder; CL A/B/C: cluster A/B/C personality disorders; PR: paranoid PD; SZ: schizoid PD; ST: schizotypal PD; AS: antisocial PD; HI: histrionic PD; BL: borderline PD; NR: narcissistic PD; AV: avoidant PD; DP: dependent PD; OC: obsessive-compulsive PD; PA: passive-aggressive PD

* This figure indicates the frequency of patients with at least one PD of cluster A or B

between the two studies using the chi-square test, finding that there was no significant difference in the frequency for either any PD, cluster C PDs, or avoidant, dependent or obsessive-compulsive PD. Compared to them, other studies reported more PDs. This might be because the PD diagnosis was made during acute depressive illness in those studies.

Based on this review of previous results and ours, the following is suggested. First, the frequency of PDs in outpatients with non-bipolar depression may not be much different between studies, if the diagnosis is made using a structured interview method and after severe depressive sysmptoms are controlled. Regarding the frequency, so many different figures have been reported, which seems confusing [34]. With such differences in the frequency of PDs, it would seem impossible to try to make clear the complex causal relationship between depression and personality, which was proposed by Akiskal et al. [1]. There is a possibility, however, that under a matched examination setting, those figures may closely resemble each other. Naturally further studies are needed to reach a conclusion regarding this.

Second, in PDs frequently seen in depressive patients, there may be a little cultural diffference. Avoidant, obsessive-compulsive, and dependent PDs were similarly frequent in the studies reviewed in Table 5, suggesting that regardless of the cultural difference between Western countries and Japan, these three PDs are common in those patients. However, narcissistic PD was frequent only in our study carried out in Japan. Even in the studies where the PD diagnosis was made during the patients' acute depressive illness, the frequency of that PD was much less than in our series. This suggests that the frequency of the PD in depressive patients may be dependent on cultural differences.

Treatment Response of Depression and Concomitant Personality Disorders

Similar to other previous studies' [8–10, 21–23, 25, 27, 31, 35], the results of our study indicate that the short outcome of depression under antidepressant treatment is significantly influenced and worsened by the presence of concomitant PD. In general, the evidence that concomitant PDs worsen the treatment outcome of non-bipolar depression under antidepressant therapy has been also found in a sample of Japanese. This means that the predictive value of the presence of PDs is also applicable in Japan.

In addition, our results show that the effect of PD on response to antidepressant medication depends on the number of PDs diagnosed in each patient and is only found if a patient has two or more (multiple) PDs. Patients with only one PD have demonstrated fair outcome similar to that of patients without PDs. To the question whether a specific type of PD or PD cluster especially influences treatment outcome of depression, our results give a negative answer. In an analysis of our study, taking no notice of the overlaps of PDs, several specific PDs such as paranoid, schizoid, borderline, narcissistic, avoidant, dependent, and obsessive-compulsive PDs

seemed to have an especially great effect on treatment outcome. However, these findings were not supported when an analysis was conducted for patients with only one of these PDs. Similar to this, in an analysis ignoring the overlaps between PD clusters, patients with PD in cluster A, B, And C seemed to have poorer outcome than patients without PD. There was no evidence, however, that patients with PD from only one PD cluster had significantly worse outcome, compared with patients without PD. These results indicate that there is no specific PD which is especially related to treatment outcome of depression, and that PDs from several clusters, rather than PDs from only one cluster, have an effect on treatment outcome. It is concluded that the effect of concomitant PDs on treatment outcome of depression is much more dependent on the number of PDs in each patient (that is, whether a patient has no PD or one PD, or multiple PDs) and whether the PDs are from multiple clusters, rather than on a specific type of PD or PD cluster. This conclusion may suggest that from the point of the effect on treatment outcome of major depressive episode, there is some limitation in the discriminant validity of specific PDs and PD clusters set up in DSM-III-R.

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