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"Patterns of comorbidity" among DSM-III-R and ICD-10 personality disorders as observed with a new inventory for the assessment of personality disorders

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Abstract Although DSM-III-R and ICD-10 suggest the assignment of multiple personality diagnoses, a high degree of overlap may be an indicator of insufficiently distinct and too inclusive types of personality. We studied this problem with a new inventory in an unselected clinical sample. The Aachen List of Items for the Registration of Personality Disorders (AMPS) integrates the different types of disordered personality according to DSM-III-R, ICD-10, and four subaffective categories, which largely follow the typologies of Kraepelin, K. Schneider, and Kretschmer. The prevalence rate of each personality disorder was calculated in a consecutive group of 231 patients. Patterns of comorbidity were computed using odds ratios. More than one personality disorder was found in 41% according to DSM-III-R. ICD-10 showed a significantly higher degree of overlap. Interesting comorbidity patterns are discussed in comparison with several North American studies. Results indicate that clear-cut categorical personality diagnoses are not likely to be set up.

Key words Personality disorders · Prevalence rates Overlap · Patterns of comorbidity

Introduction

Up to now, all classification systems have employed typological descriptions of certain prominent forms of disordered personality and have never established a differential diagnosis. K. Schneider (1950), in particular, emphasized that personality traits do not present aetiopathogenetically defined disease entities. Thus, overlap between different types of personality disorder cannot be excluded. DSM-III-R and ICD-10 even suggest the assignment of multiple personality diagnoses. However, a high degree of overlap also points to a particular problem of personality research, as it seems to indicate that the given categories cannot be taken to be sufficiently distinct personality types. By presenting too inclusive and therefore too heterogenous groups, further empirical investigations, in particular on the validity of the different types of personality disorder, are seriously handicapped (Dahl 1986).

Usually, the simultaneous occurrence of disorders that are conceptually distinct entities is called comorbidity. Therefore, the concept of comorbidity, which has become widely accepted in diagnostics research, can be problematic in the field of personality disorders. As a result, "comorbidity" will be used just in the descriptive sense of co-occurrence (Dowson 1992). The purpose of this study was to determine the degree and direction of comorbidity among personality disorders in a consecutive sample of psychiatric inpatients.

Subjects and methods

Subjects

A total of 231 patients consecutively admitted to hospital psychiatric care were included, irrespective of their clinical diagnosis; 141 patients (61%) were women and 90 (39%) were men. Mean age was 40.4 years for women and 38.7 years for men. In Table 1,

Table 1 Distribution of axis-1 categories according to DSM-III-R ($n = 231$)

Categories	Cases
Mood disorders	63 (27%)
Schizophrenia, delusional disorders psychotic disorders not elsewhere classified	67 (29%)
Anxiety, somatoform and dissociative disorders, adjustment disorders, eating disorders	59 (26%)
Psychoactive substance-induced disorders	16 (7%)
Personality disorders (without additional axis-1 diagnosis)	13 (6%)
Organically caused psychic syndromes and disorders	13 (6%)

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the distribution of axis-I-diagnoses according to DSM-III-R is presented. Only 6% showed just one personality disorder without other concomitant psychic disorders. Except for the underrepresentation of patients with psychoactive substance-induced disorders, this sample was representative for an acute psychiatric ward in this region.

Assessment procedures

In the last few years, a new inventory, the Aachen List of Items for the Registration of Personality Disorders (AMPS; Saß and Mende 1990), has been developed. Data are primarily based on subtle knowledge of biographical anamnesis in contrast to various standardized inventories, which are based on structured interviews, e.g. SCID (Spitzer and Williams 1985), PDE (Loranger et al. 1985), making the conversational situation quite unfamiliar. Besides the information given by the patients themselves, behaviour observed during inpatient treatment and informants' comments were also included in PD assessment. Since abnormal traits are mainly egosyntonic features not necessarily experienced and told by the patients themselves, this seems to be another advantage over structured interviews. The inventory allows for both comprehensive registration of relevant characteristics of behaving, experiencing and feeling, on the one hand, and practicability in clinical usage and flexibility in the therapeutic relationship, on the other.

The AMPS consists of 122 items and provides a typological assessment of abnormal personalities according to both major classification systems. Despite the differences between DSM-III-R and ICD-10, availability of an integrated list is useful with respect to the contemporary significance of both systems. All criteria of DSM-III-R and ICD-10 are covered by 94 items of the AMPS. To avoid redundance, criteria of identical or very similar content were not included, keeping the checklist feasible in clinical use. To serve this purpose, some loss of specificity and leveling out of differences between the classification systems was accepted. Another 28 criteria were added, assessing four subaffective disturbances, i.e. depressive, hyperthymic, cyclothymic, and asthenic, which largely follow the typologies of Kraepelin, K. Schneider, and Kretschmer. These subaffective types follow a psychiatric tradition in countries where German is spoken, in which relatively enduring affective conditions are taken to be traits and not states, in contrast to the international classification systems (Saß et al. 1992).

By using sums of item ratings, graduated assessments can also be accomplished. The list was examined with regard to its reliability and validity. Bias-corrected kappa coefficients for multirater agreement (Shouten 1980, 1982) computed from a group of ten raters assessing the same 20 patients ranged from 0.46 to 0.62. The program used serves to measure pairwise agreement among many judges by using categorial scales with a correction on unequal distributions of the judgment categories. According to the criteria proposed by Schouten (1980, 1982), interrater reliability obtained for each personality disorder can be considered sufficient. Internal consistency coefficients of the different subscales (Cronbach's alpha) computed from the total sample of the study ($n = 231$) range between 0.64 and 0.81. Furthermore cut-off scores were established that allow for a categorical operationalized diagnosis (Saß et al. 1994, in press).

The AMPS ratings for all patients were given by experienced clinicians trained in both the diagnosis of personality disorders and in the use of the instrument. An intensive rater training preceded the investigation and ensured sufficient standardization of PD assessment between the raters. Furthermore, the patients were well known to the raters, so that typical patterns of behavior observed during treatment could be accounted for during assessment. Training in the use of the AMPS especially focused on the differentiation between enduring behavior deviations and state-related conditions. In order to minimize effects of the acute state on personality assessment, the AMPS was applied before discharge only if the acute-state condition had largely receded. Patients with severe chronic courses of especially early onset illnesses were therefore excluded. Additionally requiring information from patients' significant others also helped to exclude episode or period-related deviations.

Table 2 Exemplary items from the Aachen List of Items for the Registration of Personality Disorders (AMPS)

- expects, without sufficient basis, to be exploited or harmed by others (evaluated as DSM-III-R/paranoid PD)
- is indifferent to the praise and criticism of others (evaluated as DSM-III-R/schizoid PD and ICD-10/schizoid PD)
- recurrent suicidal threats, gestures, or behavior, or self-mutilating behavior (evaluated as DSM-III-R/borderline PD and ICD-10/ emotionally unstable PD borderline type)
- unreasonably criticizes or scorns people in positions of authority (evaluated as DSM-III-R/passive aggressive PD)
- significant and enduring irresponsibility and disregard of social norms, rules and commitments (evaluated as DSM-III-R/dissocial PD)
- incapability to react with joy (evaluated as depressive PD)
- indicates little if any desire to have sexual experiences with another person (evaluated as DSM-III-R/schizoid PD and ICD-10/schizoid PD)
- unforgiving of insults, humiliation and injuries and a tendency to bear grudges (evaluated as ICD-10/paranoid PD and DSM-III-R/paranoid PD)
- permanent overactivity (evaluated as hyperthymic PD)
- a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of overidealization and devaluation (evaluated as DSM-III-R/borderline PD and ICD-10/emotionally unstable PD, borderline type)

In Table 2, a short, exemplary sample from the AMPS is presented.

Statistical analyses

First, the prevalence rate of each personality disorder according to the respective classification system was computed. Comorbidity between two personality disorders was computed, dividing the odds for the two disorders occurring together by the odds for the occurrence of each disorder alone. An odds ratio above four, which indicates a four-fold increase compared to the frequency expected at random, reflects a significant probability (P smaller than 0.05), an odds ratio above six reflects a high significance (P smaller than 0.01). Exact P-values and 95% confidence intervals (StatXact Ver. 2.0, CYTEL-Software 1991, Cambridge, Mass.) for significant odds ratios are given in the text below. In order to faciliate comparisons with other studies, this measure was chosen because it is widely independent of the prevalence rates of the base population (Oldham et al. 1992). However, it is less sensitive to differences in marginal probabilities, and thus to disparate prevalence rates. In these cases, Mantel and Haenszel correction was used (Mantel and Haenszel 1959).

Results

In this study group of unselected psychiatric patients, the overall prevalence of personality disorders was 36.5% according to DSM-III-R and 55.9% according to ICD-10, and 48.6% for the subaffective personality disorders. Diagnosis of multiple personality disorders were present in more than half of the patients with personality disorder (Table 3).

Table 3 Frequency of personality disorders

	DSM-III-R	ICD-10	Subaffective personality disorders
More than one personality disorder	41%	59%	43%
More than two personality disorders	11%	32%	10%
More than three personality disorders	3%	14%	0%

Table 4 gives the prevalence rate of each type of personality disorder within the three subgroups of patients with personality disorders, according to each diagnostic system. Each subgroup consists of all those patients who presented with at least one personality disorder according to the criteria of the respective diagnostic system. According to DSM-III-R, the most prevalent axis-2 diagnosis by far was the dependent personality disorder, followed by the histrionic, the obsessive-compulsive, the borderline and the avoidant personality disorder. ICD-10 yielded much higher prevalence rates, the highest for avoidant, followed by histrionic, dependent, borderline, and obsessive-compulsive disorders.

Table 5 presents patterns of comorbidity between the most interesting DSM-III-R axis-I and DSM-III-R axis-II disorders. The group of "neurotic disorders" (anxiety, somatoform, dissociative, adjustment, and eating disorders) showed the highest association with personality disorders, especially the dependent and histrionic ones. The second most frequent "state" category was that of mood disorders, most frequently associated with the dependent and obsessive-compulsive type.

Table 6 presents odds ratios for all pairs of personality disorder according to DSM-III-R. Table 7 shows analogous results for ICD-10. Both tables also consider subaffective personality disorders. Those combinations which co-occurred above chance are marked by a rectangle if the prevalence rate of each personality disorder was higher than 3%. According to DSM-III-R, two pairs were associated with highly significant odds ratios – narcissistic with antisocial (7.8; interval 1.87–29.89; $P = 0.005$) and dependent with obsessive-compulsive (1.69–25.77; $P = 0.009$) – and another 11 pairs with significant odds ratios – antisocial with paranoid (1.25–17.44; $P = 0.022$), borderline with schizoid (1.13–14.87; $P = 0.033$), histrionic with antisocial (1.13–14.87; $P = 0.033$), narcissistic with paranoid (1.46–18.28; $P = 0.016$), narcissistic with histrionic (1.36–18.96; $P = 0.014$), avoidant with schizoid (1.25–17.44; $P = 0.022$), avoidant with borderline (1.18–15.42; $P = 0.032$). The narcissistic personality disorder, occurring in three pairs, showed the greatest overlap. The schizoid, the avoidant, the borderline, and the antisocial type each were part of three pairs.

Five pairs were found consisting of a DSM-III-R and a subaffective type of personality disorder: hyperthymic with histrionic (1.25–15.11; $P = 0.027$), depressive with obsessive-compulsive (1.36–15.97; $P = 0.027$), depressive with avoidant (1.41–18.96; $P = 0.014$), asthenic with avoidant (1.12–14.92; $P = 0.031$) and depressive with dependent (1.52–19.67; $P = 0.018$). Among the subaffective disorders the depressive-asthenic pair (1.49–19.98; $P = 0.011$) was the only one which covaried beyond chance.

ICD-10 turned out to lead to a much higher level of comorbidity: eight pairs were associated with highly signif-

Table 4 Prevalence rates of personality disorders among 231 inpatients. Subgroups of patients with personality disorders according to the three diagnostic systems

Personality disorder	DSM-III-R (n = 84 [100%])	ICD-10 (n = 129 [100%])	Subaffective (n = 112 [100%])
Paranoid	4.2	15.2	
Schizoid	11.5	25.1	
Schizotypal	1.2		
Antisocial/dyssocial	3.7	13.7	
Borderline	13.6	30.6	
Histrionic	19.8	37.9	
Narcissistic	8.6		
Emotionally unstable		10.5	
Obsessive-compulsive	18.5	29.8	
Avoidant	13.6	50.8	
Dependent	48.1	33.8	
Passive-aggressive	2.5		
Depressive			50.0
Hyperthymic			6.5
Cyclothymic			53.7
Asthenic			37.9
None	63.5	44.1	51.4

Table 5 Patterns of comorbidity between axis-I and axis-II disorders

DSM-III-R (n = 84)	Paranoid	Schizoid	Schizotypal	Antisocial	Borderline	Histrionic	Narcissistic	Obsessive-compulsive	Avoidant	Dependent	Passive-aggressive
Mood disorders	1	1			1	2	1	8	4	12	
Schizophrenia, delusional disorders, psychotic disorders not elsewhere classified	1	1	1							4	
Anxiety, somatoform and dissociative disorders, adjustment disorders, eating disorders	1	1			6	9	4	3	5	11	1
Psychoactive substance-induced disorders (without additional axis-I diagnosis)		2		1	1	2				4	
Personality disorders		2		1	3	3	2	3	2	9	
Organically caused psychic syndromes and disorders		2		1				1			1

Table 6 Odds ratios for each personality disorder with respect to DSM-III-R

Personality disorder	Paranoid	Schizoid	Schizotypal	Antisocial	Borderline	Histrionic	Narcissistic	Obsessive-compulsive	Avoidant	Dependent	Passive-aggressive	Depressive	Hyperthymic	Cyclothymic	Asthenic
Paranoid															
Schizoid	1.6														
Schizotypal	3.4	5.5													
Antisocial	4.8*	1.1	2.4												
Borderline	2.8	4.1*	5.6	3.4											
Histrionic	2.8	0.3	3.3	4.1*	3.4										
Narcissistic	4.9*	0.8	2.1	7.8**	2.1	5.1*									
Obsessive-compulsive	0.8	2.7	1.4	2.4	2.2	1.4	0.8								
Avoidant	2.6	4.8*	5.2	3.8	4.3*	2.0	0.9	2.4							
Dependent	1.2	0.6	0.8	1.6	2.4	1.4	0.2	6.2**	2.8						
Passive-aggressive	3.2	0.4	1.2	2.0	1.8	3.6	4.2	0.2	0.4	0.8					
Depressive	0.8	1.2	1.3	1.4	2.1	0.8	0.2	4.3*	5.2*	4.6*	0.4				
Hyperthymic	3.4	0.2	1.4	1.6	0.7	4.2*	3.7	0.2	0.2	0.5	3.4	0.8			
Cyclothymic	2.6	0.8	2.4	1.2	1.4	2.8	2.6	0.8	0.4	0.8	2.8	2.4	3.4		
Asthenic	1.6	3.4	2.8	2.9	3.1	0.7	0.4	3.4	4.1*	3.7	0.8	5.3*	0.8	1.1	

* $P < 0.05$ ** $P < 0.01$ (P is not given if prevalence rate of one PD < 3%)

icant odds ratios – dependent with avoidant (2.97–49.62; P = 0.001), emotionally unstable with paranoid (2.67–47.73; P = 0.001), schizoid with dissocial (2.16–33.74; P = 0.003), emotionally unstable with dissocial (1.91–29.24; P = 0.006), paranoid with dyssocial (1.74–28.18; P = 0.007), emotionally unstable with schizoid (1.69–27.01; P = 0.008), obsessive-compulsive with avoidant (1.72–25.84; P = 0.008), schizoid with paranoid (1.61–26.48; P = 0.009) – another seven with significant odds ratios: histrionic with paranoid (1.08–12.67; P = 0.049), obsessive compulsive with paranoid (1.42–15.53; P = 0.032), avoidant with paranoid (1.55–20.13; P = 0.011), histrionic with schizoid (1.18–14.93; P = 0.039), histrionic with dissocial (1.18–14.92; P = 0.039), histrionic with emotionally unstable (1.30–16.64; P = 0.028), dependent with obsessive-compulsive (1.21–15.24; P = 0.034).

Discussion

Prevalences of personality disorders

Regarding prevalence rates, interesting differences between DSM-III-R and ICD-10 were found. The frequency

Table 7 Odds ratios for each personality disorder with respect to ICD-10

Personality disorder	Paranoid	Schizoid	Dissocial	Histrionic	Emotionally unstable	Obsessive-compulsive	Avoidant	Dependent	Depressive	Hyperthymic	Cyclothymic	Asthenic
Paranoid												
Schizoid	6.1**											
Dissocial	7.2**	8.5**										
Histrionic	4.0*	4.2*	4.2*									
Emotionally unstable	11.7**	6.9**	7.4**	4.3*								
Obsessive-compulsive	4.8*	2.8	2.1	1.8	2.9							
Avoidant	5.2*	2.9	0.6	0.6	2.8	6.7**						
Dependent	3.8	2.5	0.9	0.9	1.9	4.2*	12.4**					
Depressive	1.6	1.9	1.3	0.6	0.9	5.2*	7.9**	6.9**				
Hyperthymic	3.5	3.7	2.9	11.4**	4.2*	1.9	0.9	0.6	0.8			
Cyclothymic	4.2*	2.2	4.2*	3.5	3.6	0.9	3.1	3.2	2.4	3.4		
Asthenic	2.7	2.7	0.9	1.2	2.1	5.1*	9.8**	9.8**	5.3*	0.8	1.1	

* $P < 0.05$ ** $P < 0.01$

of personality disorders was much higher using ICD-10 than DSM-III-R. We suppose this to be primarily the result of varying cut-offs; on average the cut-offs of ICD-10 are distinctly lower than those of DSM-III-R. Remarkable differences in prevalence rates also resulted within the same personality category, e.g. the avoidant one, so that conceptual differences were also to be considered. The subaffective types were present frequently. Therefore, their clinical importance seems likely. However, the high prevalences may indicate some mingling with state conditions.

The ICD-10 distribution of prevalence rates was very similiar to that of the first German multicenter study which assessed the frequency of each type of personality disorder (Dittmann et al. 1992). With regard to DSM-III-R, two prevalence rates were quite amazing in comparison with other studies. The borderline personality disorder, in particular, was not so often found in our sample; there was a prevalence rate of 13.6% in our sample versus 20% in the sample of Nurnberg et al. (1991) or even 33.3% in that of Morey (1988). Most studies concerning personality disorders refer to samples of highly socially disturbed inpatients (Boyd et al. 1984; Fyer et al. 1988; Oldham et al. 1992; Pfohl et al. 1986; Zanarini et al. 1987) who seek treatment only because of their maladaptive personality traits. Thus, prevalence rates might differ due to specific features of the overall sample studied, including those which derive from peculiarities in international comparison, e.g. differences resulting from cultural characteristics of the samples. This may have also contributed to the second characteristic of our sample, the frequency of obsessive-compulsive personality disorder (prevalence rate of 18.5%). While this result differs from those in American studies (prevalence rates under 10%; compare Widiger and Rogers 1989), Maier et al. (1992) found that the obsessive-compulsive type was the personality disorder of maximum frequency in a German community sample. Furthermore, the frequency of this type may be related to the high number of concomitant mood disorders in our population. The patterns of comorbidity between axis-I and axis-II disorders support this idea: the obsessive-compulsive personality disorder was primarily associated with mood disorders. The dependent personality disorder presented an even higher extent of comorbidity with mood disorders. These results can be related to concepts of premorbid personality, which emphasize the frequency of traits such as meticulosity, pedantry and dependency among unipolar depressive patients (Pössl and Zerssen 1990). The frequent association between personality disorders and "neurotic disorders" meets the expectation that subjects with enduring characterological abnormalities have a higher lifetime risk of generating, for example, anxiety, dissociative or eating disorders.

Comorbidity among personality disorders

In our sample, comorbidity between personality disorders seemed to be the rule. This result is in line with other studies (Oldham et al. 1992; Widiger and Rogers 1989). The most interesting comorbidity patterns will be discussed below. DSM-III-R results are of more importance in this respect because of the availability of comparable studies.

Table 8 gives a survey of important findings of comorbidity research during the last few years, which refer to

Table 8 Studies on patterns of comorbidity

Co-occurrence with respect to DSM-III-R	Morey (1988)	Widiger (1989)	Oldham (1992)	RWTH (1992)
Specific definition of significance	Frequency of co-occurrence	Co-occurrence rates	Odds ratios	Odds ratios
1. Schizotypal < > Avoidant	X	X	X	x
2. Histrionic < > Narcissistic	x	x	X	x
3. Antisocial < > Narcissistic	X	0	X	X
4. Schizotypal < > Borderline	0	X	x	x
5. Passive-aggressive < > Narcissistic	x	0	x	x
6. Schizoid < > Avoidant	x	x	0	x
7. Avoidant < > Borderline	0	x	0	x
8. Histrionic < > Borderline	X	X	x	0
9. Antisocial < > Passive-aggressive	x	x	X	0
10. Dependent < > Borderline	x	x	x	0
11. Dependent < > Avoidant	0	x	X	0
12. Antisocial < > Borderline	0	X	0	0
13. Schizotypal < > Paranoid	X	0	0	0
14. Passive-aggressive < > Histrionic	0	x	0	0
15. Passive-aggressive < > Avoidant	0	x	0	0
16. Passive-aggressive < > Borderline	0	x	0	0
17. Obsessive-compulsive < > Dependent	0	0	0	X
18. Paranoid < > Antisocial	0	0	0	x
19. Histrionic < > Antisocial	0	0	0	x
20. Schizoid < > Borderline	0	0	0	x
21. Paranoid < > Narcissistic	0	0	0	x
22. Schizoid < > Schizotypal	0	0	0	x
	x: > 50% X: > = 55%	x: > = 17 X: > = 24	x: > = 4 X: > = 6	x: > = 4 X: > = 6

DSM-III-R criteria. Comparability is again limited because of differences in sample characteristics. Furthermore, one must be cautious when comparing studies using DSM-III criteria (Kass et al. 1985; Dahl 1986; Pfohl et al. 1986; Livesley and Jackson 1986; Hyler and Lyons 1988), because there is limited agreement between personality disorder diagnoses according to DSM-III and DSM-III-R.

In the DSM-III-R classification system, the narcissistic type of personality disorder presents the highest amount of overlap. As Table 8 reveals, a number of investigators (Morey 1988a; Widiger and Rogers 1989; Oldham et al. 1992) have found that the narcissistic and the histrionic personality disorder often co-occur. This seems to be reasonable from a clinical point of view because of some common personality traits, such as being self-centered and longing to attract attention or admiration. This conceptual overlap is also reflected in similar items. Egocentrism, callousness in human relations, hypersensitivity to rejection, and being easily offended could also be common traits between the narcissistic and the antisocial type, a pair with highly significant co-occurrence in most studies (Morey 1988a; Oldham et al. 1992). In our sample, the prevalence rate of the antisocial personality disorder was too low to discuss further conclusions. There remains the question whether classification of the narcissistic personality disorder is sufficiently valid in its current form, demonstrating such high rates of comorbidity. Gunderson and Ronningstam (1991) assume an extensive conceptual overlap within the criteria of the narcissistic type, yet three out of a total of seven items refer to the grandiose self-experience of narcissistic personalities (exaggeration of talents and accomplishments, grandiose fantasies, belief in uniqueness). On the other hand, it appears to us to be striking that the deeply felt threat to one's sense of self-esteem, which seems to be the basic condition of narcissistic personality, is not included among the items, probably because it is not reflected in behavior. Feelings of unworthiness and fragile self-esteem are only mentioned in the exposition of the narcissistic typology.

The borderline personality disorder, which is also part of the dramatic, emotional and erratic cluster of DSM-III-R, did not present in our study the high degree of comorbidity that is otherwise often found and criticized (Widiger and Rogers 1989; Nurberg et al. 1991). Furthermore, there was no co-occurrence with the histrionic type. This finding may be surprising, because of common features regarding dimensional factors, such as extraversion and neuroticism. Similiar to other comorbidity studies (McGlashan 1987; Zimmermann and Coryell 1989; Kavoussi and Siever 1992), the results point to some overlap with the odd and eccentric cluster, namely with the schizotypal, but also with the schizoid type. However, because of the

very low prevalence rate of the schizotypal personality disorder in our sample, co-occurrence rates are probably prone to random fluctuations and therefore cannot be commented on.

Substantial co-occurrence of the avoidant and schizoid personality disorders have often been reported (Morey 1988 a; Widiger et al. 1991; Oldham et al. 1992) and can be explained to a considerable extent by an overlap of the diagnostic items. Beside common features which relate to social anxiety and withdrawal, there is even an identical item which refers to the absence of friends and confidants. This pattern of comorbidity must be considered an example of "artificial comorbidity", i.e. substantial correlation is due to identical criteria (Oldham et al. 1992). DSM-III-R already tried to decrease comorbidity by leaving out some of the overlapping items of DSM-III, especially in the dramatic/emotional cluster.

One of the highest percentages of overlap in our study relates to the obsessive-compulsive/dependent pair of comorbidity. In contrast to this finding, Widiger et al. (1991) point out absence of any substantial correlation with other types of personality disorder for the compulsive personality disorder. One may assume that not only the prevalence rates of both of the personality disorders but also their co-occurrence rate result from the frequency of concomitant mood disorders in our sample.

The comorbidity pattern we have found with respect to ICD-10 seems to be questionable. The lower diagnostic cut-offs for the polythetic item lists may be the most important reason. In addition, it appears to be problematic to subsume diagnostic criteria belonging to the DSM-III-R concept of narcissistic personality disorder (concerning feelings of grandiosity or hypersensitivity to rejection or criticism) under the paranoid type in ICD-10. Some of the co-occurring pairs do not even coincide with clinical judgements such as histrionic/schizoid, emotionally unstable/schizoid. Whether this excessive comorbidity in ICD-10 also points to some inconsistencies within the constructs of the different types of personality must be further investigated.

As far as subaffective disorders are concerned, all pairs appear to be clinically reasonable, especially the depressive/obsessive-compulsive and the depressive/dependent. The most extensive amount of covariation is again present for those forms of personality disorders which have items in common: the depressive/asthenic and the depressive/avoidant type.

Limitations

A limitation of this study is the specific focus on axis-II disorders. Beside axis-I diagnosis, there was no additional assessment of state-related deviations. Thus, interference with axis-I disorders cannot be completely ruled out, although the mingling of state- and trait-related conditions was minimized by the method of assessment. The dependent and avoidant types of personality disorder (with anxious and depressive states), in particular, are susceptible to interference with state conditions. Therefore, the high prevalence rates of DSM-III-R dependent personality disorder and ICD-10 avoidant personality disorder might be influenced by axis-I disorders. Furthermore, the conceptualization of "subaffective personality disorders" as enduring subaffective deviations calls for very careful differentiation from affective axis-I disorders. With regard to the high prevalence rates of depressive and cyclothymic personality disorder, their differentiation from major affective states seems to be insufficient in our study. Further studies will focus on this problem in order to clarify the classification of these permanent shifts of mood and drive within a possible continuum of affective psychiatric disorders. Another limitation of the study results from the exclusion of patients with severe chronic and early onset disorders. This exclusion criterion might have contributed to the low co-occurrence of schizophrenic and personality disorders in our sample.

The prevalence rate of personality disorders in clinical samples of patients with coexisting axis-I disorders is often reported to be high – usually between 40% and 50% (Mellsop et al. 1982) – in comparison with community samples where personality disorders are diagnosed in about 10% of the subjects (Maier et al. 1992). An additional axis-II diagnosis often complicates therapy and prognosis of patients' axis-I disorder with the consequence of longer treatment and more frequent relapses (Reich and Green 1991). Furthermore, personality disorder might modify help-seeking behavior and therefore might also contribute to a higher number of rehospitalisations. These factors could have influenced the recruitment of our sample of consecutively admitted patients and might have led to some increase of prevalence rates and overlap among personality disorders.

Another methodological problem is that of multiple significance testing. Since 165 tests were carried out overall, some of the reported significant results may be spurious. However, strict type-I error adjustment would lead to very low error levels for individual odds ratios. Therefore, the results presented should be interpreted with some caution. Additionally, the reliabilities of the various personality disorders are low – but comparable to other studies (Bronisch and Mombour 1994) – and may reflect measurement errors which might covary between the various types of personality disorder and interact with their prevalences and co-occurrences.

Conclusion

Although admittedly, personality types are not diagnostic entities that can be sufficiently separated from each other, the extensive overlap among personality disorders could encourage one to think of further improvement. Though the DSM-III-R revision intended to diminish co-occurrence (Widiger et al. 1988), it resulted in a substantial increase both in prevalence and in co-occurrence (Morey 1988 a), and ICD-10 even presents a higher degree of comorbidity than DSM-III-R.

The data presented suggest that comorbidity increases when presenting duplicate criteria. The mostly intuitive fixing of cut-off points (Widiger 1992) and here especially the low cut-offs in ICD are likely to have contributed to the high prevalence rates and the extensive degree of overlap. Empirical research on personality disorder during the last decade has led to elaborate constructs of disordered personality. Criteria could be probably further specified by a stronger orientation towards these underlying constructs which may consider affective, cognitive and interpersonal traits beside behavioral patterns for all types of personality disorder.

In line with the results of other studies, our data demonstrate that DSM-III-R, and even more so ICD-10, fail to identify distinct and clearly defined types of personality disorder. Though the current classification systems could be improved by more sophisticated typologies, clear-cut categorical personality diagnoses are not likely to be set up.

References

1. Boyd J, Burke J, Gruenberg E (1984) Exclusion criteria of DSM-III: a study of co-occurences of hierarchy-free syndromes. Arch Gen Psychiatry 41:983–989
2. Bronisch T, Mombour W (1994) Comparison of a diagnostic checklist with a structured interview for the assessment of DSM-III-R and ICD-10 personality disorders. Psychopathology: in press
3. Cytel Software Corporation (1991) StatXact Ver 2.0. Cambridge Mass.
4. Dahl S (1986) Some aspects of the DSM-III personality disorders illustrated by a consecutive sample of hospitalized patients. Acta Psychiatr Scand 73:62–66
5. Dittmann V, Dilling H, Freyberger H (1986) Psychiatrische Diagnostik nach ICD-10 – klinische Erfahrungen bei der Anwendung [Psychiatric diagnostics according to ICD-10 – clinic experiences by using]. Hans Huber, Bern Göttingen Toronto
6. Dowson JH (1992) Assessment of DSM-III-R personality disorders by self-report questionnaire: the role of informants and a screening test for comorbid personality disorders (STCPD). Br J Psychiatry 161:344–352
7. Fyer M, Frances A, Sullivan T (1988) Comorbidity of borderline personality disorder. Arch Gen Psychiatry 45:348–352
8. Gunderson JG, Ronningstam E (1991) Is narcissistic personality disorder a valid diagnosis? In: Oldham JM (ed) Personality Disorders: New Perspectives on Diagnostic Validity. American Psychiatric Press, Washington London pp 107–119
9. Hyler S, Lyons M (1988) Factor analysis of the DSM-III personality disorder clusters: a replication. Compr Psychiatry 29: 304–308
10. Kass F, Skodol A, Charles E (1985) Scaled ratings of DSM-III personality disorders. Am J Psychiatry 142:627–630
11. Kavoussi RJ, Siever LJ (1992) Overlap between borderline and schizotypal personality disorders. Compr Psychiatry 33(1): 7–12
12. Livesley WJ, Jackson DN (1986) The internal consistency and factorial structure of behaviors judged to be associated with DSM-III personality disorders. Am J Psychiatry 143:1473–1474
13. Loranger AW, Susman VL, Oldham HM, Russakoff LM (1985) Questionnaire for personality disorders (PDE): A structural interview for DSM-III-R and ICD-9 personality disorders. WHO/Adamho Pilot Version, 15. 3. 1985. New York Hospital Cornell Medical Center, Westchester Division, White Plain, New York
14. Mantel N, Haenszel W (1959) Statistical aspects of the analysis of data from retrospective studies of disease. J Natl Cancer Inst 22:719–748
15. Mayer W, Lichtermann D, Klingler T, Heun R, Hallmayer J (1992) Prevalences of personality disorders (DSM-III-R) in the community. J Pers Disord 6(3):187–196
16. McGlashan T (1987) Testing DSM-III symptom criteria for schizotypal and borderline personality disorders. Arch Gen Psychiatry 44:143–148
17. Mellsop GW, Varghese F, Stephens J, Hicks A (1982) The reliability of axis II of DSM-III. Am J Psychiatry 139: 1360–1361
18. Morey LC (1988) Personality disorders in DSM-III-R: convergence, coverage, and internal consistencey. Am J Psychiatry. 145:573–577
19. Morey LD (1988) The categorical representation of personality disorders: a cluster analysis for DSM-III-R personality features. J Abnorm Psychol 97(3):314–321
20. Nurnberg HG, Raskin M, Levine PE, Pollack S, Siegel O, Prince R (1991) The comorbidity of borderline personality disorder and other DSM-III-R axis II personality disorders. Am J Psychiatry. 148:1371–1377
21. Oldham JM, Skodol AE, Kellmann D, Hyler SE, Rosnick L, Davies M (1992) Diagnosis of DSM-III-R personality disorders by two structured interviews: patterns of comorbidity. Am J Psychiatry. 149:213–220
22. Pfohl B, Coryell W, Zimmerman M, Stangl D (1986) DSM-III personality disorders: diagnostic overlap and internal consistency of individual DSM-III criteria. Compr Psychiatry 27: 21–34
23. Pössl J, von Zerssen D (1990) Die prämorbide Entwicklung von Patienten mit verschiedenen Psychoseformen [The premorbid development of patients with different forms of psychosis]. Nervenarzt 61:541–549
24. Reich JH, Green AI (1991) Effect of personality disorders on outcome of treatment. J Nerv Ment Dis 179:74–82
25. Saß H, Herpertz S, Houben I (1992) Modern concepts of personality disorders from the viewpoint of clinical psychopathology. Neurol Psychiatry Brain Res 1:116–121
26. Saß H, Mende M (1990) Zur Erfassung von Persönlichkeitsstörungen mit einer integrierten Merkmalsliste gem. DSM-III-R und ICD-10 bei stationär behandelten psychiatrischen Patienten [Registration of personality disorders with an integrated list of items according to DSM-III-R and ICD-10 within a population of psychiatric inpatients]. In: Baumann K, Fähndrich E, Stieglitz RD, Woggon B (eds) Veränderungsmessung in Psychiatrie und Klinischer Psychologie, pp 195–206
27. Saß H, Steinmeyer EM, Ebel H, Herpertz S (1994) Untersuchungen zur Kategorisierung und Dimensionierung von Persönlichkeitsstörungen [Studies on categorial and dimensional concepts of personality disorders]. Z Klin Psychol (in press)
28. Schneider K (1950) Die psychopathischen Persönlichkeiten [The psychopathic personalities]. 9th ed Deuticke, Wien (1st ed 1923 Thieme, Leipzig)
29. Shouten HJA (1980) Measuring pairwise agreement among many observers. Biom J 22:497–504
30. Shouten HJA (1982) Measuring pairwise agreement among many observers II. Some improvements and additions. Biom J 24:431–435
31. Spitzer RL, Williams JB (1985) Structured clinical interview for DSM-III, patient version. Biometrics Research Department New York State Psychiat Institute New York
32. Sternbach SE, Gunderson JG (1992) Cognitive and perceptual distortions in borderline personality disorder and schizotypal personality. Disorder in a Vignette Sample. Compr Psychiatry 33(3):186–189
33. Trull TJ, Widiger TA, Frances AJ (1987) Covariation of criteria sets for avoidant, schizoid, and dependent personality disorders. Am J Psychiatry. 144:767–771
34. Widiger T, Frances A, Spitzer R, Williams DSW (1988) The DSM-III-R personality disorders: an overview. Am J Psychiatry 145:786–795

35. Widiger TA (1992) Categorical versus dimensional classification: implications from and for research. J Pers Disord 6(4): 287–300
36. Widiger TA, Frances AJ, Harris M, Jacobsberg LB, Fyer M, Manning D (1991) Comorbidity among axis II disorders. In: Oldham JM (ed) Personality Disorders: New Perspectives on Diagnostic Validity. American Psychiatric Press, Washington London, pp 163–194
37. Widiger TA, Rogers JH (1989) Prevalence and comorbidity of personality disorders. Personality Disorders.
38. Zanarini M, Frankenburg F, Chauncey D (1987) The diagnostic interview for personality disorders: interrater and test-retest reliability. Compr Psychiatry 28:467–480
39. Zimmermann M, Coryell W (1989) DSM-III personality disorder diagnoses in a nonpatient sample. Arch Gen Psychiatry 46: 682–689