

Expanding a Structural Model of Psychopathology:
Where do Borderline Personality Disorder Criteria Fit?

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For our presentation for this meeting, we were asked to focus on “Borderline Personality Disorder from the perspective of internalization and externalization”. The internalizing and externalizing constructs have emerged from work on the structure of child and adolescent psychopathology (Achenbach & Edelbrock, 1984), and related work on the structure of adult psychiatric comorbidity. For example, Krueger and Markon (2006a) recently presented a meta-analysis of comorbidity patterns in diverse epidemiological samples of adults. Their results indicate that unipolar mood and anxiety disorders can be conceptualized as elements in a coherent “internalizing spectrum” of problems, whereas substance use and antisocial disorders fall within an “externalizing spectrum.” Importantly, this structure appears to reflect not only the observed, phenotypic patterning of adult psychopathology, but also the underlying etiologic structure of genetic risk for these common forms of psychopathology (Kendler, Prescott, Myers, & Neale, 2003)

Nevertheless, a notable limitation of literature on the structure of comorbidity is that it has focused on a subset of the full range of adult psychopathology seen in clinical settings (Krueger & Markon, 2006b). This limitation is a direct function of available data. Specifically, studies of psychiatric disorders in the community-dwelling population tend to focus on a limited subset of disorders, often for practical reasons (e.g., participant burden is minimized by omitting assessment of many disorders described in standard classification systems, such as the DSM). Evolving a model for the structure of psychopathology would logically entail analysis of data from community-based studies incorporating additional varieties of psychopathology, beyond those that represent more typical targets in psychiatric epidemiology.

In addition to practical considerations that limit the scope of most extant data, there are other conceptual and empirical reasons to pursue an extension of existing comorbidity models to additional varieties of psychopathology. Krueger (2005) recently reviewed literature on putative empirical bases for distinguishing between axis I and axis II disorders in the DSM. Krueger’s (2005) conclusion was that “state” disorders currently described on axis I and “personality” disorders described on axis II were more similar than different in terms of stability, age of onset, treatment response, insight, comorbidity and symptom specificity, and etiology. This conclusion suggests the conceptual utility of identifying constructs that transcend axis I and II, and using these constructs as classificatory rubrics for psychopathology.

The current paper describes some preliminary analyses we have pursued with the aim of extending a structural account of adult psychopathology beyond the limited subset of disorders studied to date. Specifically, we

located and analyzed data that included phenomena that have been the major focus of work to date (unipolar mood, anxiety, substance use, and antisocial disorders), but also extended the assessment to other varieties of psychopathology -- most notably psychosis and DSM-defined personality pathology, including Borderline Personality Disorder criteria.

Method

Research Participants

The data for the current analysis come from a study of psychiatric morbidity among adults living in private households in Great Britain conducted in 2000 (Singleton, Lee, & Meltzer, 2002). A representative household sample of the British adult population aged 16-74 was obtained (N = 8,405) and interviewed to ascertain psychiatric symptomatology.

Assessment of Psychopathology

The interview in this study included questions from a variety of instruments, including the Clinical Interview Schedule (CIS-R), a screen for psychotic symptoms, the SCID II screening questionnaire, the Alcohol Use Disorders Identification Test (AUDIT), and substance dependence questions taken from the ECA study. We used specific items from these instruments to create variables corresponding to specific criteria from the DSM-IV-TR. In assembling these variables, criteria that overlap among DSM constructs were represented only once. For example, fatigue appears in both the major depressive episode and generalized anxiety disorder criteria but was represented by a single variable in our analyses. Specifically, we assembled the following 122 variables (abbreviations that form the prefixes of the variable names in Table 1 are given in parentheses): (1) variables representing the nine criterion A symptoms of Major Depressive Episode (MDE); (2) an elevated mood and an irritability variable, corresponding with criterion A of Manic Episode (MAN); (3) physical complaints, corresponding with criterion A of Somatization Disorder (SOM); (4) fears of disease, corresponding with criterion A of Hypochondriasis (HYP); (5) a panic score, akin to the Panic Attack construct from the DSM (PAN); (6) variables representing phobic fear and avoidance, corresponding with criteria A and D of Specific Phobia (PHO); (7) an obsessions variable and a compulsions variable, corresponding with criterion A of Obsessive-Compulsive Disorder (OCD); (8) worry and anxiety variables, corresponding with criterion A of Generalized Anxiety Disorder (GAD); (9) variables corresponding with the role failure, hazardous use, and social problems criteria of Alcohol Abuse (ALA); (10) variables corresponding with the withdrawal, difficulty cutting down, use related activity, and persistent problems criteria of Alcohol Dependence

(ALD); (11) variables corresponding with the tolerance, withdrawal, larger-longer, unsuccessful moderation, and extensive activity criteria of other Substance Dependence (OSD); (12) delusions and hallucinations corresponding with criteria A1 and A2 of Schizophrenia (SCZ); (13) non-bizarre delusions corresponding with criterion A of Delusional Disorder (DEL); (14) All PD criteria except criteria 4, 6 and 7 of schizotypal and 3 & 5 of histrionic (these were not assessed because they are based on clinical observation; AVP = avoidant, DPP = dependent, OCP = obsessive-compulsive, PAP = paranoid, STP = schizotypal, SDP = schizoid, HSP = histrionic, NSP = narcissistic, BDP = borderline, ASP = antisocial, CON = conduct disorder). The timeframe for the questions was current complaints (e.g., past month), or in the case of PD criteria, no time frame was specified (the question stem was “are you the kind of person who...”).

Analytic Approach

We estimated appropriate correlations between all pairs of variables (e.g., the estimated association between two ordinal variables was the polychoric correlation between those variables) and then fit exploratory factor models (EFA) to the resulting correlation matrix. Model parameters were estimated using Unweighted Least Squares (ULS). These exploratory analyses represent preliminary descriptions of the structure of the sample data, an initial step in working toward a more formal model comparison endeavor.

Results

Examination of the EFA results pointed toward interpreting an 8-factor solution. The scree plot leveled out at 8 factors; the root mean residual this level was good (.034) and did not decline appreciably for solutions with greater numbers of factors; the factors were interpretable. We rotated the loading matrix from this solution to the promax criterion. Promax-rotated loadings and labels for the factors are reported in Table 1. A factor corresponding specifically with the borderline criteria did not emerge. Rather, the borderline criteria tended to be associated with multiple factors.

Promax is an oblique rotation, such that correlations among the 8 factors were estimated in the prior procedure (see Table 2). We submitted this 8-factor correlation matrix to ULS EFA to examine the higher order structure of the eight factors. RMR at the 3-factor level was good (.021) and the solution was readily interpreted. Promax rotated loadings are reported in Table 3. The three factors were readily interpretable as internalizing, externalizing, and psychosis.

Comment

The preliminary analyses reported here both replicate and extend previous research on the structure of psychopathology in adults. In particular, because the targets of our analysis were 122 fine-grained diagnostic criteria as opposed to a smaller number of diagnoses, we documented a more variegated structure at the primary factor level than could be documented in prior work. Nevertheless, the higher-order structure of our primary dimensions clearly resembles previous work on the structure of psychiatric comorbidity (Krueger & Markon, 2006a), with the key addition of a psychosis factor that appears to be separate from the internalizing and externalizing factors.

In addition, this work extends previous research through the inclusion of Axis II criteria in the analysis, including those that delineate borderline. In this context, the borderline criteria appeared complex, in the sense that they were indicative of more than one domain of psychopathological variation. That is, rather than loading on a single factor in the criterion-level factor analysis, the borderline criteria spread across multiple factors.

One way to understand and interpret these results is to conceptualize borderline as a configural personality construct. The construct of borderline emerged from clinical observation, as opposed to factor analytic research on the structure of personality (Skodol, Gunderson, Pfohl, Widiger, Livesley, & Siever, 2002). These approaches to delineating personality structures (clinical observation and psychometric analysis) are sometimes seen as being at odds, but are perhaps better viewed as perspectives in need of better integration. For example, we have taken this approach in working to understand another robust clinical personality construct, psychopathy (Cleckley, 1976). Our work on psychopathy converges on the idea that it represents the confluence of two dimensions that are essentially independent in the population at large, fearless dominance and impulsive antisociality (Krueger, 2006). When these two characteristics combine in a specific personality, they define a rather striking person who is prone to behaviors that are both unusual and problematic for society, and this may be why such persons delineate a group of great interest to clinical descriptive psychopathologists. Borderline may be similar in the way that it combines separable domains such as affective dysregulation, behavioral dyscontrol, and disturbed interpersonal relatedness in a single individual (cf. Skodol et al., 2002).

We feel this configural perspective on borderline can be helpful because it brings together the clinical and psychometric traditions. Rather than expecting borderline to emerge as a single, individual dimension of personality-psychopathology variation, it may be more profitable to think of borderline as an unusually virulent combination of separable dimensions. We look forward to discussion at this meeting and collaborative research that

expands on this perspective and brings together clinical and psychometrically oriented perspectives on borderline phenomena.

References

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Table 1. Promax-rotated loadings for an eight factor model of criterion-level variables

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
MDE1DYS	0.890	0.031	-0.025	-0.026	0.013	-0.085	0.082	-0.058
MDE2ANH	0.898	0.102	-0.080	-0.121	-0.001	0.092	0.020	-0.140
MDE3WEI	0.435	0.055	-0.025	-0.017	-0.016	0.098	-0.128	0.103
MDE4SOM	0.663	-0.072	-0.057	-0.070	0.035	0.061	-0.016	0.027
MDE5MOT	0.967	0.051	-0.074	-0.089	-0.037	0.062	0.048	-0.057
MDE6FAT	0.794	0.093	-0.039	-0.058	-0.106	-0.023	0.063	0.018
MDE7COG	0.848	0.024	0.102	-0.025	0.033	-0.091	0.068	-0.019
MDE8CON	0.759	0.058	0.009	-0.021	-0.021	-0.040	0.055	0.004
MDE9SUI	0.219	0.016	0.033	-0.053	0.025	0.001	-0.001	-0.002
MAN0POS	-0.113	-0.072	-0.012	0.080	0.004	-0.035	-0.068	0.058
MAN0IRR	0.604	0.100	-0.028	0.013	0.041	-0.080	0.072	0.108
SOM0PHY	0.668	-0.007	-0.002	-0.010	-0.092	-0.027	0.070	0.033
HYP0FRS	0.678	0.010	0.032	0.042	-0.036	0.028	0.063	-0.102
PAN1PAN	0.624	-0.162	0.097	-0.056	0.143	0.051	-0.077	0.139
PHOBFRS	0.194	-0.049	0.129	-0.026	0.034	-0.052	-0.019	0.128
PHODAVD	0.347	-0.109	0.188	-0.026	0.068	-0.047	-0.028	0.222
OCD0OBS	0.395	-0.182	0.210	0.003	0.028	0.044	0.031	0.131
OCD0COM	0.519	-0.074	0.087	0.058	-0.005	-0.037	0.000	0.108
GAD0WOR	0.734	-0.040	0.009	0.033	0.046	-0.121	0.108	0.051
GAD0ANX	0.751	-0.005	0.051	0.004	-0.025	-0.098	0.088	-0.005
ALA1ROL	0.033	-0.033	0.053	0.064	0.795	-0.064	-0.027	-0.072

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
ALA2HAZ	0.005	-0.014	0.029	0.061	0.623	0.087	-0.094	0.022
ALA4SOC	0.117	-0.068	-0.103	0.044	0.771	0.149	0.107	-0.115
ALD2WIT	0.122	0.016	0.005	-0.029	0.768	0.172	-0.131	-0.127
ALD4CUT	0.079	-0.089	-0.006	0.050	0.429	0.036	0.028	-0.058
ALD5EXT	-0.050	-0.056	-0.146	0.105	0.762	0.027	0.039	-0.179
ALD7PER	-0.070	-0.036	0.000	0.112	0.862	-0.003	-0.048	-0.095
OSD3INT	0.010	0.271	0.101	0.001	0.217	-0.221	-0.084	0.307
OSD1TOL	-0.081	0.187	0.046	0.092	0.432	-0.048	-0.374	0.319
OSD2WTH	-0.123	0.243	0.107	-0.129	0.320	-0.088	-0.302	0.564
OSD4CUT	-0.105	0.185	0.083	-0.058	0.327	0.010	-0.372	0.428
OSD5EXT	-0.010	0.036	-0.021	0.046	0.224	-0.044	-0.108	0.134
SCZ1DEL	0.149	-0.023	0.046	-0.080	-0.032	-0.021	-0.062	0.661
SCZ2HAL	0.165	-0.013	-0.162	-0.062	-0.063	0.032	-0.003	0.647
DEL0PAR	0.225	-0.018	0.077	0.008	0.091	-0.051	0.065	0.478
AVP1INP	0.018	0.093	0.573	-0.180	0.082	-0.087	0.100	0.110
AVP2INV	-0.043	-0.014	0.733	-0.041	0.020	0.075	0.071	0.022
AVP3INT	-0.016	0.136	0.562	-0.205	0.115	0.070	0.167	-0.001
AVP4REJ	-0.023	-0.029	0.788	0.058	0.033	-0.270	0.203	0.143
AVP5INH	-0.142	0.003	0.614	-0.348	0.032	0.095	0.147	-0.041
AVP6INF	0.030	-0.033	0.652	-0.050	-0.055	-0.090	0.001	0.106
AVP7EMB	0.046	0.024	0.816	-0.075	-0.161	-0.041	0.016	-0.147
DPP1DEC	0.051	-0.063	0.756	0.113	-0.024	-0.019	-0.187	-0.107

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
DPP2RSP	0.074	0.134	0.449	0.136	-0.053	0.045	-0.112	-0.242
DPP3DIS	-0.005	-0.054	0.619	0.032	-0.097	-0.004	0.006	-0.066
DPP4SLF	0.142	-0.045	0.584	0.073	0.035	0.136	-0.157	-0.211
DPP5NUR	0.001	0.031	-0.143	0.092	-0.147	-0.075	0.090	0.310
DPP6CAR	0.201	-0.034	0.435	0.115	-0.008	0.025	-0.256	-0.004
DPP7REL	0.057	0.123	0.449	0.371	0.005	-0.096	-0.116	-0.089
DPP8ABA	0.202	-0.042	0.568	0.212	-0.088	-0.051	-0.160	-0.086
OCP1DET	0.067	-0.174	0.007	0.172	-0.054	-0.082	0.392	0.021
OCP2PRF	0.179	-0.022	0.267	0.176	0.086	0.049	0.258	-0.114
OCP3WRK	0.181	0.019	-0.023	0.128	0.008	0.096	0.428	-0.002
OCP4IFX	0.105	-0.074	-0.121	0.153	-0.167	0.064	0.403	0.041
OCP5OBJ	0.095	-0.099	0.091	0.077	0.007	0.063	0.225	-0.072
OCP6TSK	0.073	0.001	0.168	0.141	0.031	0.161	0.370	-0.009
OCP7HRD	0.098	-0.026	0.286	-0.013	-0.125	0.217	0.175	-0.076
OCP8RIG	0.012	0.070	-0.064	0.263	0.070	0.340	0.223	-0.087
PAP1SUS	0.027	-0.182	0.256	0.111	-0.065	0.094	0.079	0.487
PAP2DBT	0.029	-0.026	0.357	0.062	0.041	0.162	0.122	0.321
PAP3REL	-0.048	-0.036	0.259	-0.033	0.059	0.326	0.135	0.367
PAP4HID	-0.012	-0.024	0.326	0.119	0.012	0.110	0.166	0.377
PAP5GRU	-0.013	0.092	0.193	0.088	0.050	0.179	0.249	0.022
PAP6HOS	0.075	0.110	0.251	0.228	0.028	0.144	0.082	0.025
PAP7JEA	0.081	-0.013	0.145	0.091	0.071	0.042	-0.089	0.301

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
STP1REF	0.006	-0.003	0.428	0.108	-0.076	0.113	0.011	0.393
STP2ODD	-0.013	0.037	-0.068	0.188	-0.268	-0.009	0.055	0.636
STP3EXP	-0.005	0.032	-0.057	0.102	-0.255	-0.006	0.021	0.687
STP8FRI	-0.036	0.018	0.162	-0.167	0.015	0.121	0.275	0.219
STP9PAR	0.021	0.000	0.802	-0.171	0.003	-0.010	0.103	0.091
SDP1CLS	-0.060	0.106	0.053	-0.116	-0.004	0.615	0.134	-0.066
SDP2SOL	-0.002	-0.014	0.180	-0.155	-0.047	0.597	0.220	0.038
SDP3SEX	0.024	-0.124	0.031	-0.189	-0.213	0.262	-0.023	0.197
SDP4PLE	0.100	0.006	0.211	-0.091	-0.003	0.454	0.034	0.047
SDP6IND	0.015	-0.004	-0.440	-0.038	0.074	0.724	-0.082	-0.032
SDP7DET	-0.031	-0.005	0.098	-0.101	0.042	0.535	0.031	-0.027
HSP1CEN	-0.058	0.041	-0.099	0.761	0.076	-0.157	0.047	-0.020
HSP2SEX	0.006	0.062	-0.228	0.631	0.203	-0.115	0.004	0.034
HSP4ATT	-0.055	-0.014	0.045	0.772	0.152	-0.100	0.009	-0.083
HSP6MEL	0.050	0.054	-0.114	0.733	-0.022	-0.142	0.020	0.034
HSP7SUG	-0.053	-0.001	0.284	0.334	0.005	0.049	0.063	-0.044
HSP8INT	-0.005	-0.145	-0.227	0.382	-0.028	-0.098	-0.332	-0.060
NSP1IMP	-0.016	0.040	-0.020	0.290	0.033	0.226	0.222	0.170
NSP3SPE	-0.016	0.006	-0.192	0.378	-0.055	0.274	0.039	0.099
NSP6EXP	-0.049	0.139	-0.138	0.380	0.004	0.240	0.172	0.074
NSP8ENV	-0.052	0.030	0.163	0.398	-0.002	-0.001	0.138	0.146
NSP2FAN	-0.081	0.101	-0.059	0.503	0.098	0.044	0.099	0.176

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
NSP4ADM	-0.102	-0.066	0.178	0.695	0.074	-0.031	0.122	-0.061
NSP5ENT	-0.120	-0.013	0.098	0.594	-0.128	0.096	0.019	0.087
NSP7EMP	-0.129	0.024	0.009	0.027	0.097	0.572	0.051	-0.099
NSP9ARR	-0.087	0.074	0.075	0.029	0.059	0.524	0.122	0.092
BDP3IDE	0.097	-0.004	0.164	0.168	0.075	0.046	0.026	0.154
BDP5HRM	0.163	0.234	0.219	-0.027	0.110	-0.095	-0.043	0.268
BDP8ANG	0.217	0.175	0.214	0.133	0.074	0.088	0.041	0.091
BDP1ABN	0.104	-0.070	0.249	0.239	0.067	-0.010	-0.056	0.238
BDP2REL	0.124	-0.025	0.157	0.175	0.055	0.184	-0.051	0.212
BDP4IMP	0.017	0.098	-0.139	0.269	0.006	0.029	-0.021	0.274
BDP6INS	0.321	0.027	0.317	0.106	0.059	0.047	-0.012	0.175
BDP7EMP	0.403	-0.030	0.324	0.013	0.047	0.109	0.018	0.158
BDP9DIS	0.201	0.192	0.311	0.038	0.086	-0.093	-0.006	0.312
ASP1ILL	0.032	0.174	-0.070	0.040	0.246	-0.034	0.010	0.066
ASP2DEC	0.013	0.437	-0.069	0.083	0.234	0.037	-0.061	0.216
ASP3IMP	0.071	0.295	-0.034	0.115	0.115	0.158	-0.104	0.186
ASP4AGG	0.108	0.240	-0.014	0.016	0.065	0.034	0.056	0.051
ASP5SAF	-0.024	0.450	-0.090	-0.037	0.394	-0.083	0.202	-0.079
ASP6IRR	-0.065	0.049	-0.012	-0.204	0.026	0.235	-0.147	0.200
ASP7REM	-0.097	-0.375	-0.026	0.041	-0.093	0.132	-0.054	-0.088
CON1BUL	-0.005	0.772	0.023	0.068	-0.125	0.004	-0.023	-0.067
CON2FIG	-0.008	0.744	-0.059	0.049	-0.032	0.067	-0.076	-0.042

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
CON3WEA	0.025	0.746	-0.092	0.006	-0.004	0.056	-0.024	0.096
CON4CRU	0.024	0.817	-0.008	0.147	-0.124	-0.023	0.050	-0.019
CON5ANI	-0.055	0.791	0.151	0.049	-0.055	-0.116	0.169	-0.124
CON6ROB	0.106	0.878	-0.120	-0.016	-0.137	0.142	-0.083	0.034
CON7SEX	-0.061	0.702	0.150	0.175	-0.216	-0.062	0.066	0.004
CON8FIR	-0.065	0.648	-0.003	-0.021	0.187	-0.060	0.065	-0.029
CON9DES	0.001	0.768	0.051	-0.024	0.068	-0.008	0.050	-0.006
CON10BUR	0.014	0.880	-0.060	-0.089	0.000	0.129	-0.037	-0.083
CON11CON	0.039	0.693	0.038	0.089	0.001	0.070	-0.078	0.008
CON12THE	-0.013	0.775	0.007	-0.073	0.096	-0.081	0.036	0.017
CON13RUN	0.156	0.493	-0.041	-0.035	0.016	0.087	-0.220	0.133
CON14CUR	0.045	0.490	-0.014	0.050	0.022	0.193	-0.203	-0.016
CON15TRU	0.061	0.430	0.026	-0.026	-0.028	0.267	-0.209	-0.047

Note. Correspondence between variable name prefixes and DSM concepts are given in the text. The number that comes next in the variable name is the criterion number in the DSM, and the last three letters are an abbreviation of the specific criterion (e.g., BDP3IDE is Borderline criterion 3, identity disturbance).

Table 2. Promax-derived correlations among 8 primary level factors

	Internalizing	Antisocial aggression	Interpersonal sensitivity	Histrionic characteristics	Substance problems	Introversion	Perfectionism	Psychosis
Internalizing	1.000							
Antisocial aggression	0.267	1.000						
Interpersonal sensitivity	0.564	0.233	1.000					
Histrionic characteristics	0.336	0.394	0.283	1.000				
Substance problems	0.252	0.518	0.234	0.325	1.000			
Introversion	0.328	0.304	0.435	0.305	0.128	1.000		
Perfectionism	-0.003	-0.025	0.098	0.027	-0.012	0.009	1.000	
Psychosis	0.549	0.469	0.482	0.472	0.443	0.390	0.115	1.000

Table 3. Promax-rotated loadings for a 3-factor model of the correlations among 8 primary level factors

<i>Factor Label</i>	<i>Externalizing</i>	<i>Internalizing</i>	<i>Psychosis</i>
<i>Internalizing</i>	.069	.529	.168
<i>Antisocial Aggression</i>	.948	-.033	-.117
<i>Interpersonal Sensitivity</i>	-.091	.944	-.068
<i>Histrionic Behavior</i>	.369	.135	.172
<i>Substance problems</i>	.566	-.052	.126
<i>Introversion</i>	.137	.451	-.001
<i>Perfectionism</i>	-.083	.024	.140
<i>Psychosis</i>	.327	-.001	.835

Note. Loadings > .3 are given in boldface