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## Subjective Boundaries and Combinations in Psychiatric Diagnoses

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This distinctions embodied in official psychiatric diagnoses represent arbitrary and subjective views of patients' problems. Historically, individual psychiatrists were free to superimpose their own distinctions and categories. In recent decades, a uniform set of concepts has been negotiated, promoted, and enforced. The uniform diagnoses improve descriptive communication and meet administrative needs. However, they remain arbitrary. This essay argues that a descriptive theory of psychiatric problems should distinguish the objective pattern of correlation among the thoughts, feelings, and behaviors in question from the subjective view of them embodied in diagnoses. A map of correlations among psychiatric symptoms reveals a graded circular spectrum, analogous to a color wheel. The psychiatric types are *not* empirical islands in correlational space. They are subjective points of reference on a circular continuum. Problems that appear to be of one type shade into those that appear to be of another. Salient locations on the circle correspond to the following labels, in the following order: schizophrenia, alcoholism, autonomic arousal, sleep problems, emotional distress, fear and panic, paranoia, and back to schizophrenia.

The boundaries of psychiatric diagnoses are arbitrary, somewhat like lines of longitude and latitude superimposed on the earth's globe; even more like Munsell chips of just-noticeably-different colors superimposed on the visual continua of hue, value, and chroma. As I will show, the analogy between psychiatric problems and perceived colors is particularly apt. The questions one can ask about distinctions among mental illnesses parallel those about distinctions among colors. How many distinct colors are there? How many distinct mental illnesses? Where is the boundary between red and yellow? Where is the boundary between schizophrenia and depression? Are red and

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pink the same color? Are depression and dysthymia the same problem? The theory of color also illustrates the kind of thinking that can lead psychiatric assessment out of its morass of distinctions. The neo-Kraepelineans are trying to pave the ground with reified diagnoses, yielding predictable results (Mirowsky and Ross, 1989a, 1989b). The subject matter continually shifts beneath the misplaced concreteness. A lighter step, guided by reference posts, may provide a surer means of traversing the ground.

What basis is there for saying that the boundaries of psychiatric diagnoses are arbitrary? Most of the evidence comes from the creators and proponents of diagnostic schemes. The task of negotiating and promulgating diagnostic standards was not brief or easy, and it is not finished. This essay begins with a brief history of the current official psychiatric diagnoses, describes the degree and sources of variability and uncertainty in the official scheme, maps the correlations among the symptoms on which diagnoses are based, discusses the relationship of diagnostic overlays to symptom patterns, and recommends a theory of psychiatric diagnosis that distinguishes objective patterns of symptoms from diagnostic overlays.

## Origins and Validity of Contemporary Psychiatric Diagnoses

### *Chaotic Beginnings*

The crisp "syndromes" described in diagnostic manuals are not distinct and characteristic collections of symptoms and signs that immediately impress themselves on the minds of clinical observers. They are official classifications laboriously negotiated over decades, promulgated by the American Psychiatric Association and the National Institute of Mental Health, and enforced through control of grants and reimbursements. Before the push to institute official standards in the late 1970s, there was little agreement on concepts, definitions, and diagnostic criteria. Rates of psychiatric rejection at World War II induction centers ranged from 0.5% to 50.6%, and the specific diagnoses selected at different sites were "bizarrely at odds (Robins, 1985, p. 919). The natural variety of diagnostic ideas and practices gave no hint of distinct, empirical syndromes with universal inter-observer validity. There were tantalizing broad similarities in the distinctions made, but nothing to suggest that the boundaries between one mental illness and another, or between mental illness and wellness, could be found in the observations themselves.

### *A Glimpse at Patterns*

The late 1960s and early 1970s produced a wave of serious attempts to shape psychiatric diagnoses by reference to empirical syndromes. The results of those

studies led psychiatric nosologists and epidemiologists to abandon objective patterns of correlation as a basis for discovering or evaluating diagnostic constructs. The studies of that era used exploratory factor analysis to search for syndromes. A factor is a set of symptoms and signs with two things in common: they covary among themselves more than with other symptoms and signs, and their profiles of correlations with other symptoms, signs, traits, statuses, etc. are similar. A syndrome is one of two things: either a distinct *combination* of symptoms known to result from a single cause, or a set of symptoms that occur together so commonly that they appear to constitute a distinct clinical picture. The first definition of a syndrome could not be applied because there was little knowledge of, and even less agreement about, the causes of psychiatric symptoms. Researchers turned to the second definition of a syndrome, which is very close to that of a factor.

A number of large studies collected uniform information on the symptoms of patients in psychiatric treatment. Factor analyses of the data revealed problems that clustered empirically, but did not correspond one-to-one with clinical diagnoses. For example, one group of researchers found that symptom patterns could be summarized in the following factors: inappropriate or bizarre appearance or behavior, belligerence and negativism, agitation and excitement, retardation and emotional withdrawal, speech disorganization, suspicion or a sense of persecution, hallucinations and delusions, grandiosity, depression and anxiety, tendency to suicide or self-mutilation, somatic concerns, social isolation, disorientation and memory problems, antisocial impulses or acts, drug abuse, and alcohol abuse (Endicott and Spitzer, 1972; Spitzer, Endicott, Fleiss, and Cohen, 1970; Spitzer, Fleiss, Endicott, and Cohen, 1967). On the whole these factors did not, and still do not, correspond to the diagnostic categories in fashion.

The factor analytic studies showed that clinical psychiatric categories are not empirical syndromes in one sense: they do not constitute distinct factors. In fact, the symptoms treated as attributes of each diagnostic category are drawn from a number of factors that often have little or no correlation with each other, and that often correlate equally well with a number of different diagnoses. The researchers might have tailored new diagnostic categories to reflect the empirical syndromes (that is, a diagnosis of bizarre appearance and behavior, of belligerence and negativism, of agitation and excitement, etc). Instead they chose to save the traditional clinical categories by reinterpreting the results. The researchers showed that patients grouped by clinical diagnosis have distinct profiles of average scores on the factors. For example, patients diagnosed as depressed *and* those diagnosed as paranoid schizophrenic have higher than average scores than others on indexes of agitation, anxiety, social isolation, thoughts of suicide, and depressed mood. The two diagnostic groups are distinguished from each other by higher than average scores among those

diagnosed as paranoid schizophrenic on indexes of suspicion, belligerence, grandiosity, and bizarre behavior. By treating the clinical categories as *causes* of the symptom factors, the researchers presented each distinct factor profile as a syndrome in the first sense given above — as a distinct *combination* of symptoms known to result from a single cause.

There is a fallacy in interpreting the distinct factor profiles as evidence that the clinical categories are empirical syndromes. The fallacy is obvious to anyone not committed to psychiatric culture and thus not inclined to reify its categories. *Patients' symptoms are not caused by the categories through which their doctors perceive and organize symptoms* (except for the secondary problems resulting from labeling). Only someone who believes a psychiatric category is as real as a microorganism could see its factor profile as a distinct combination of symptoms resulting from a single cause. Anyone else would see the psychiatric category as an arbitrary subjective combination of factors. With 16 factors, treated for simplicity as present or absent, there are 65,536 possible clinical categories with distinct profiles. Each of the phantom categories not in use has just as much validity, by the test of having a distinct factor profile, as the relatively small number fashionable at any one time. The diagnostic categories exist in the subjective and interpretive culture of psychiatry, and not in the objective pattern of correlation among mental, emotional, and behavioral problems.

### *Marshaling Consensus*

The growing realization that clinical diagnoses do not correspond to symptom factors led clinical researchers to abandon factor analysis as a means of validating or shaping diagnostic practice. Factor analysis was temporarily banished to community studies of so-called screening scales, and finally displaced altogether by approaches more congenial to psychiatric preconception. To do this successfully, it was necessary to hone and unify that preconception. The evolving strategy was to demonstrate “procedural validation” (Robins, 1985; Robins, Helzer, Ratcliff, and Seyfried, 1982) by building professional consensus and measuring it as inter-rater reliability. Several major research centers developed their own systems of diagnostic categories and criteria for use in their own clinical research (Weissman, Myers, and Ross, 1986). Committees of the American Psychiatric Association developed somewhat looser descriptions and criteria for clinical use (American Psychiatric Association, 1980). The National Institute of Mental Health contracted to develop a diagnostic protocol for use in a large, multi-city survey called the Epidemiologic Catchment Area (ECA) study. NIMH wanted the ECA protocol to reflect the existing systems. An NIMH committee reviewed the four major research instruments in use at the time, and brought together the

researchers to hash out differences in definitions and criteria. Of the four research instruments considered, only one had been developed and validated using factor analysis. It was immediately eliminated from any further consideration because "its scales were based on internal consistency rather than approximating traditional clinical syndromes" (Robins, 1986, p. 415).

Clearly, the researchers and NIMH scientists realized they could not count on the objective patterns of correlation among symptoms to approximate traditional clinical syndromes. How, then, could they develop an instrument that would be accepted as valid by researchers and clinicians? The answer was to use inter-rater reliability as the measure of validity (Mirowsky and Ross, 1989a, 1989b). Inter-rater reliability measures the extent of agreement between two judges. Inter-rater reliability is notoriously low in psychiatric diagnosis, but it can be increased dramatically through the use of standardized interview schedules and rote diagnostic rules. Developers of ECA's *Diagnostic Interview Schedule* (DIS) labored to demonstrate that firm guidance and oversight can coax psychiatrists into a higher level of diagnostic agreement, and that a similar level of agreement can be induced between psychiatrists and lay interviewers operating under the same constraints (Robins, 1985; Robins et al., 1982).

The ingenuity of the "procedural validation" is that it sidesteps any reference to empirical correlation between symptoms, let alone deeper forms of validation. It is only necessary to get the judges to consider the same information and follow the same decision rules. The pieces of information do not have to be related, and the rules do not have to reflect anything more than the ability and willingness of the judges to use them. Take the medieval diagnosis of witchcraft as an example. Several highly respected inquisitors agree that witches may be known by three or more of the following signs: talking to animals, foul breath, avoiding churches and men of the cloth, walking on moonlit nights, and dancing alone. To validate the diagnostic category and criteria, we only need show that any pair of trained inquisitors using these signs and the three-or-more rule will agree on who is or is not a witch more frequently than expected by chance. The more the inquisitors follow these guidelines, the more they will find themselves in agreement, which will bolster professional use of the diagnostic system and public confidence in the profession's determinations.

### Sharp Distinctions Along Fuzzy Boundaries Between Uncertain Locations

#### *Variability in the Clinic*

Despite official psychiatry's strenuous efforts to promote uniformity, clinical diagnosis remains highly variable. Clinical studies show that the large major-

ity of diagnostic categories have inadequate inter-rater reliability, with agreement less than 70% of that possible above random chance (Kutchins and Kirk, 1986). In all likelihood, agreement is even lower among psychiatrists not working at a research center and not having their diagnoses reviewed and compared. A study of actual diagnostic practice at a community mental health center found that the psychiatrists frequently criticized the official diagnostic system as rigid, inapplicable, or beside the point (Brown, 1987). Commonly, a specific diagnosis was chosen for its administrative effect from a list of diagnoses that seemed to fit about equally well. Clinical social workers who use official psychiatric diagnoses say they do so primarily for insurance purposes (Kutchins and Kirk, 1988). Most find the psychiatric diagnoses of little or no value for understanding and predicting clients' behavior or for planning treatment. Most feel the diagnoses overlay medical labels on psychosocial problems, and particularly do not help in understanding marital and family problems. However, the great majority contend that the official diagnoses establish a common language to communicate about mental disorders. On the whole, clinicians seem to treat the official diagnoses as administrative pigeon holes and linguistic tags that do little to explain the nature and cause of problems, and that rarely provide an apt description of a patient's symptoms and problems.

### *Variability in Research*

Unlike clinicians, epidemiologists ask standard questions, record answers in a standard format, and use computers to make diagnoses according to highly explicit rules. As a consequence, epidemiologists achieve higher inter-rater reliability than clinicians. Evaluations of the diagnostic systems used by epidemiologists underscore the fact that the distinctions being made are not inherent in the pattern of observed symptoms, but rather exist in the minds that formulate the categories. First, each set of diagnostic rules is different from the others. Using the same data from the same set of patients, the four most commonly used sets of rules often disagree. Overall diagnostic agreement between systems is about 70% of the agreement possible above that due to chance (Robins, Helzer, Croughan, and Ratcliff, 1981). (The percent of agreement above chance is measured using the  $\kappa$  coefficient discussed by Kutchins and Kirk [1986].) Between NIMH's rules used in the ECA studies and the APA's clinical rules, agreement on who is depressed or schizophrenic is only about 65% of the agreement possible above that due to chance. Second, the more leeway psychiatrists are allowed in interviewing and judging, the lower the agreement between their diagnoses and those of a standardized protocol, dropping to 19% for schizophrenia and from 25% to 50% for depression (Anthony, Folstein, Romanoski, VonKorff, Nestadt, Chahal, Merchant,

Brown, Shapiro, Kramer, and Gruenberg, 1985; Helzer, Robins, McEvoy, Spitznagel, Stoltzman, Farmer, and Brockington, 1985). Every psychiatrist knows and recognizes depression and schizophrenia, yet diagnostic agreement among psychiatrists is remarkably low and consequently difficult to codify.

### *Overlapping Circles*

The inherent fuzziness of psychiatric problems produces very high correlations between diagnoses. For example, the distinction between depression and schizophrenia is the most basic. Nevertheless, the odds of qualifying for a diagnosis of schizophrenia are 28.5 times greater among those who qualify for a diagnosis of major depression than among those who do not (Boyd, Burke, Gruenberg, Holzer, Rae, George, Karno, Stoltzman, McEnvoy, and Nestadt, 1984). Odds ratios work both ways, so the opposite is also true: the odds of qualifying for a diagnosis of major depression are 28.5 times greater among those who qualify for a diagnoses of schizophrenia than among those who do not. In fact, qualifying for any one NIMH-ECA diagnosis increases the odds of qualifying for every other one. The multiples range from a low of 1.6 for alcoholism and somatization to a high of 89.1 for schizophrenia and mania, with the average of being 10.3 (geometric mean). (To put these values in perspective, the odds of qualifying for a diagnosis of schizophrenia are 3.4 times greater among those with a family history of mental disorder compared to those without [Link, Dohrenwend, and Skodol, 1986], and they are 7.8 times greater among those in the bottom 25% of socioeconomic status compared to those in the top 25% [Holzer, Shea, Swanson, Leaf, Myers, George, Weissman, and Bednarsky, 1986]). The odds of getting lung cancer are 14.0 times greater for those who smoke than for those who do not [Mausner and Bahn, 1974]). Clearly, the superimposed psychiatric categories overlap a great deal.

Several things account for the remarkably large odds ratios between diagnoses. One way or another, they all reflect the fact that the boundaries between disorders are superimposed, and not found in the phenomena themselves. First, a number of the most important causes or risk factors affect several different disorders. The most notable is low social status, which increases the odds of just about every disorder (e.g., Holzer et al., 1986). Also, a family history of one type of disorder increases the risk of developing other types (Boyd et al., 1984). Second, problems tend to cascade from one type to another, as when alcoholism results in depression and hallucinations, or when delusions lead to antisocial behavior (e.g., Kendell, 1988). Third, almost all psychiatric cases have in common the symptoms and signs of demoralization, which include dread, anxiety, sadness, feelings of helplessness and hopelessness, and poor self-esteem (Dohrenwend, Shrout, Egri, and Mendelson, 1980).

Rare or distinctive problems are accompanied by these common ones (Boyd et al., 1984). Fourth, the ideal types represented by diagnostic rules often share defining features with other types. For example, withdrawal is considered an attribute of both schizophrenia and depression, and delusions of grandeur are considered attributes of both schizophrenia and mania. Shared attributes increase the correlations among diagnoses.

#### *In Between, Just Short of, and Left Over*

The inherent fuzziness of psychiatric problems generates diagnostic categories defined as in between, just short of, or left over from other categories (American Psychiatric Association, 1980; Srole and Fischer, 1980). Categories defined as in between others cover the blend of primary categories, like naming orange the hue blending red and yellow. Schizoaffective disorder blends schizophrenia and depression. Paranoid schizophrenia blends paranoia and schizophrenia. Categories defined as just short of others cover variations in intensity, like calling pink the color red in hue but light and low in saturation. Dysthymia is just short of major depression. Cyclothymia is just short of major bipolar depression. Schizophreniform personality is just short of schizophreniform disorder, which is just short of schizophrenia. Finally, there are diagnoses for cases that cannot be classified with any degree of certainty as in between or just short of anything specific. They are designated "unspecified" if the case does not provide sufficient information for making a judgment, "residual" if the case does not fit any of the defined subcategories in a larger class, and "atypical" if a case does not quite meet the minimum criteria for one major class and instead blends aspects of others. These are the beige, taupe, heather and tweed of the diagnostic order.

#### **A Circular Spectrum: Correlations from a Community Survey**

A map of the correlations among symptoms provides the best illustration of why psychiatric categories are so blurry. The reason is that the problems on which diagnoses are based do not divide themselves neatly into distinct syndromes. Problems classified as one type mix with and shade into problems classified as another type. A map of the correlations also shows why there seem to be different types of problems, despite the difficulty of drawing clear boundaries between them. The reason is that the broadest psychiatric concepts represent salient loci on a circular gradient of problems, much like red, yellow and blue on a color wheel.

#### *Mapping the 4,095 Correlations Among 91 Symptoms*

Modern psychometric techniques can map the location and clusters of symptoms in correlational space. By definition, the correlation between two



symptoms increases to the extent that the presence of one multiplies the odds of the presence of the other. The higher the correlation between two symptoms, and the more similar their profiles of correlation with other symptoms, the closer they are in correlational space.

To map correlations, a computer program begins by giving each symptom a random location. Then it measures the distance between all the pairs of locations and compares the distances to the respective correlations. If two symptoms are farther apart than their correlation says they should be, the program moves them closer together. If the symptoms are too close, the program moves them farther apart. The program keeps shuffling the points around until the fit of the distances to the correlations stops improving (Kruskal and Wish, 1978).

Figure 1 shows a map of 4,095 correlations among 91 of the most important psychiatric symptoms. Complete descriptions of them are in Table 1. The symptoms were chosen from standard research indexes and diagnostic questionnaires (Spitzer and Endicott, 1978; Wheaton, 1985). These are the symptoms on which psychiatric diagnosis is based. They represent the problems of the overwhelming majority of all patients seen and diagnosed by psychiatrists.

For most of the symptoms, individuals were asked how often they had it or how often it happened in the last 12 months. Seven of the symptoms are the interviewers' observations of behavior during the interview. Most people do not have, or rarely have, most of the symptoms. However, everyone has some of them, and every symptom is experienced frequently by at least some people.

The data come from a community survey of 463 people living in El Paso, Texas, and Juarez, Mexico, called the Life Stress and Illness Project (Burnam, Timbers, and Hough, 1984; Hough, Fairbank, and Garcia, 1976). This survey has, to our knowledge, the most complete list of symptoms of all forms of psychological problems of any community study. The respondents were selected by careful random-sampling. They represent the typical range of people living in El Paso and Juarez. Most people in the community have symptoms that range in severity from mild to moderate, although some have severe problems. Very few are psychiatric patients or have ever been psychiatric patients. All were interviewed in their homes, in English or Spanish depending on the person's preference. (One of the original purposes of the study was to find out if the pattern of correlations among symptoms depends on the subjects' language and culture. In these data, it does not. The patterns are essentially the same for the Mexicans as for the Anglos.)

In order to show the relationship of diagnostic concepts to the pattern of correlations, symptoms are classified into five main categories: depression, anxiety, schizophrenia, paranoia, and alcoholism. The assignment of symp-



**Figure 1.** Map of the correlations of 91 psychiatric symptoms. See Table 1 for the wording of each item. Data from the Life Stress and Illness Research Project (Hough, Fairbank, and Garcia, 1976). This graph is reprinted with permission from *Social Causes of Psychological Distress* (Mirowsky and Ross, 1989c, pp. 42 and 43) [Copyright ©1989 by Aldine de Gruyter.]

Table 1

List of Symptoms Mapped in Figure 1, Categorized by Psychiatric Diagnosis

Schizophrenia

- Dominated by forces: felt that your mind was dominated by forces beyond your control
- Hear voices: heard voices without knowing where they came from
- See things: seen things or animals or people around you that others did not see
- Visions: had visions or seen things other people say they cannot see
- Possessed: felt that you were possessed by a spirit or devil
- Special powers: felt you had special powers
- Felt dead: felt that you did not exist at all, that you were dead, dissolved
- Thoughts aloud: seemed to hear your thoughts spoken aloud — almost as if someone standing nearby could hear them
- Thoughts broadcast: felt that your unspoken thoughts were being broadcast or transmitted, so that everyone knew what you were thinking
- Afraid might do wrong: felt afraid that you might do something seriously wrong against your own will
- Strange thoughts: had unusual thoughts that kept bothering you
- Useless thoughts: had useless thoughts that kept running through your mind

Paranoia

- Trust no one: felt it was safer to trust no one
- Plotted against: believed you were being plotted against
- Talk behind back: felt that people were saying all kinds of things about you behind your back
- Enemies: felt you had enemies who really wished to do you harm
- Suspicious: been very suspicious, didn't trust anybody
- All against me: been sure that everyone was against you

Depression-mood

- Nothing worthwhile: wondered if anything was worthwhile anymore
- Suicidal: thought about taking your own life
- Nothing turns out: felt that nothing turned out for you the way you wanted it to
- Deserve punishment: felt you deserved to be punished
- Should die: felt that others would be better off if you were dead
- Felt evil: felt that you have done something evil or wrong
- Wish I'd die: wished you were dead
- Worthless: felt very bad or worthless
- Self blame: blamed yourself for something that went wrong
- Hopeless: felt completely hopeless about everything
- Lonely: felt lonely
- Felt like crying: felt like crying
- Guilty; felt guilty about things you did or did not do
- Useless: felt useless
- Lose temper: lost your temper
- Low spirits: been in low spirits
- Brood: brooded over unpleasant thoughts or feelings
- Don't care: just didn't care what happened to you
- Moody: been moody and unhappy
- Helpless: felt completely helpless
- Tearful: the respondent cried or was tearful

(Manic)

- Exciting schemes: had times when exciting new ideas and schemes occurred to you one after another
- Thoughts race: became so excited that your thoughts raced ahead faster than you could speak them

Table 1 continued

List of Symptoms Mapped in Figure 1, Categorized by Psychiatric Diagnosis

Depression-malaise

- Don't talk: became very quiet and didn't talk to anyone  
 No interest: shown no interest in anything or anybody  
 Can't concentrate: had trouble concentrating or keeping your mind on what you were doing  
 Lose thoughts: kept losing your train of thought  
 Mind not work: felt that your mind did not work as well as it used to  
 Blue: had periods of feeling blue or depressed that interfered with your daily activity  
 No get go: had periods of days or weeks when you couldn't take care of things because you couldn't "get going"  
 Confused: felt confused; had trouble thinking  
 Sick from anger: got angry and afterward felt uncomfortable, like getting headaches, stomach pains, cold sweats and things like that  
 Can't remember: began having trouble remembering things  
 Can't stay asleep: had trouble staying asleep  
 Wake early: had trouble with waking up early and not being able to fall asleep again  
 Oversleep: had trouble with oversleeping; that is, sleeping past the time you wanted to get up  
 Tired: troubled by feeling tired all the time  
 Nightmares: been bothered by nightmares  
 Poor appetite: had poor appetite  
 Weak: felt weak all over  
 Weight loss: experienced any weight loss of 10 lbs. (5 kg) or more over the past year, without going on special diets

*(Manic)*

- Too excited: felt so great (excited, talkative or active) that it was difficult to concentrate

Anxiety-mood

- Worry a lot: worried a lot about little things  
 Anxious: felt anxious about something or someone  
 Irritated: got easily irritated  
 Worry: I am a person who is the worrying type

*(Panic)*

- Afraid to go out: felt afraid to leave the house because you were afraid something might happen to it  
 Fear closed places: been afraid to be in closed places  
 Fear something: feared something terrible would happen to you  
 Fears: had special fears that kept bothering you  
 Fear attack: feared being robbed, attacked, or physically injured

Anxiety-malaise*(Autonomic)*

- Muscles twitch: had trouble with your muscles twitching or jumping  
 Can't fall asleep: had trouble falling asleep  
 Cold sweats: had cold sweats  
 Dizzy: had dizziness  
 Breathless: had shortness of breath when you were not exercising or working hard  
 Hands tremble: had your hands tremble  
 Palpitations: had your heart beating hard when you were not exercising or working hard  
 Hot all over: suddenly feel hot all over

Table 1 continued

List of Symptoms Mapped in Figure 1, Categorized by Psychiatric Diagnosis

Anxiety-malaise continued*(Behavioral)*

- Restless: had periods of such great restlessness that you could not sit in a chair for very long
- Fidgeting: the respondent kept fidgeting and squirming
- Nervous: the respondent appeared nervous and fidgety
- Not listening: the content of the respondent's answers often have little or nothing to do with the questions asked
- Drumming: the respondent drums on surfaces with fingers or taps on floor
- Moves around: the respondent kept getting up and moving around restlessly

*(Obsessive)*

- Repeat act: had to repeat an act over and over again though it is hard to explain to others why you did it
- Do over 'n over: found yourself doing the same things over and over again to be sure they were right

Alcoholism

- Blurred speech: the respondent's speech was blurred
- Makes up words: the respondent makes up new words
- Drink and miss work: missed work or been late to work because of drinking
- Drink and argue: had arguments with your family because of your drinking
- Sick from drink: had trouble with your health because of drinking

toms to categories follows standard research and diagnostic practice (American Psychiatric Association, 1980; Wheaton, 1985). Symptoms of depression and anxiety are further subdivided into mood (feelings) and malaise (bodily states).

*Reading the Map*

The map shows a circular gradient of correlation. There are salient loci that suggest some of the standard psychiatric distinctions, such as paranoia, schizophrenia, and alcoholism. The psychiatric types are *not* empirical islands in correlational space. They are subjective points of reference on the circular continuum. Problems that appear to be of one type shade into those that appear to be of another.

Viewers of the map are likely to share some rough, common perceptions of the primary loci and major distinctions. Each viewer also is likely to have a unique sense of the number and location of primary loci, and of the boundaries between them. The distinctions in Table 2 represent the author's reading of the map.

The map of symptom correlations illustrates the relationship of objective patterns to official diagnostic constructs and to individual differences in the perception of disorders. The symptoms representing the core of a specific official diagnosis, such as schizophrenia, concentrate in a particular region

**Table 2**  
 Author's View of Salient Loci on the Map of Symptom Correlations (Figure 1)

Primary Type	Clock Location	Clock Range
Schizophrenia	12:00	11:00 - 1:00
Alcoholism	2:45	2:00 - 3:00
Autonomic arousal	5:30	4:00 - 7:00
Sleep problems	8:00	7:30 - 8:30
Emotional distress	9:00	8:30 - 9:30
Fear and panic	10:00	9:30 - 10:30
Paranoia	10:45	10:30 - 11:00
Schizophrenia	12:00	11:00 - 1:00

of the circular spectrum. However, they also blend into adjacent regions, and some appear far from the main concentration. A researcher interpreting the pattern of correlations tends to see a number of distinct salient locations. The individual's distinctions roughly correspond to official psychiatric constructs because of two things: the concentration of apparently similar symptoms near specific loci, and trained predisposition to subdivide the spectrum along traditional lines. On the other hand, an individual researcher's distinctions would rarely coincide exactly with official ones, or with those of another researcher. Because the symptoms do not form isolated islands in the correlational space, the number of salient loci and the boundaries between them can vary considerably from observer to observer. This explains why the traditional diagnoses can seem to have inter-observer validity despite low diagnostic concordance and despite drifting fashions in diagnostic rules.

### Designing Better Concepts and Measures

The traditional categorical form of thinking inherited by psychiatry from medicine provides the poorest possible means of representing mental, emotional, and behavioral problems. Each diagnosis is an arbitrary subjective combination of problems from multiple loci in correlational space. Developing, promoting, and enforcing the use of official combinations does not make them any less arbitrary. It creates an illusion of objectivity and concreteness. The illusion may suit the institutional needs of insurance companies, government agencies, and the medical profession. The danger is that it discourages the development of non-diagnostic concepts and measures that are more efficient, flexible, and exact for scientific and clinical purposes.

Contemporary psychiatric epidemiology illustrates some of the problems with diagnostic concepts and measures. The ECA studies estimate the prevalence and socio-demographic patterns of various diagnoses in the population.

What does it mean to say that X% of the population has a combination of problems from multiple locations in correlational space that fits the arbitrary but official definition of a traditional psychiatric concept? Any desired prevalence can be estimated by adjusting the decision rules over a wide range of equally plausible and acceptable ones. How is it possible to predict the risk factors for membership in a class that is a just-noticeably-different subjective combination of problems from disparate locations in correlational space? The only consistently detectable risk factors must be ones that increase all kinds of problems regardless of their location in the space (factors such as low income, low education, and a family history of problems). Arbitrary prevalence and obscured patterns of risk are a poor scientific yield.

The circular spectrum suggests concepts and measures that avoid problems created by overlapping, arbitrary, and reified diagnoses. Rather than categorize individuals, researchers and clinicians can assess each person's severity of problems of various types. Each type of problem is a salient location on the spectrum. A type of problem is represented by an index composed of items in or near the location that appear similar and distinctive. The types are subjective, but their locations are not. The correlation between types of problems represents the proximity of their central locations, which is partly objective (based on symptom locations) and partly subjective (based on how one divides the spectrum). Severity is the frequency or duration of problems in a location. Severity is represented by the average frequency or duration of problems of a particular type.

An individual's profile of index scores can be thought of in several ways. One way is as arrows pointing from the center of the circle toward the salient locations represented by each type. The length of each arrow reflects the severity of its type of symptom. Another way is as gradations of saturation or shading that vary from one location to another on the rim of the circle.

Risk factors can be represented in the correlational space, too. One way is to draw a small symbol at each symptom's location, varying the symbol according to the symptom's correlation with a risk factor. For example, the symbols for Mars and Venus can represent symptoms more common among men and women respectively. Alternately, the correlation between a risk factor and different types of symptoms can be represented as arrows of varying length pointing from the center toward the location of each type.

*Thinking* of psychiatric problems as locations on the spectrum of problems eliminates the confusion introduced by subjective categorical distinctions and combinations. Although some researchers and clinicians may prefer graphic representations, many will prefer index scores. The important thing is to break the constraints of categorical diagnostic *concepts*. Doing so has three main advantages. First, it eliminates the confusion between types of problems and types of people. It does this by not categorizing people. Second, it explicitly

distinguishes the objective pattern of correlations among problems from the subjective division of problems into noticeably different types. Third, it encourages us to wonder why the pattern is as it is, and why we see it as we do.

The third advantage brings us back to color theory as a model for developing a theory of psychiatric disorder. Color theory has three parts: a physical theory of energy waves that include visible light, a biological theory of the anatomy and physiology of human vision, and a psychophysical theory of color phenomena. The three main parts of the theory developed together over a period of centuries. The links among the components are particularly revealing. For example, violet and purple appear similar, but they are at opposite ends of the physical spectrum. The similarity is purely in our visual system. Likewise, the fact that all colors can be mixed from three primary colors (plus black) is built into our visual system. It reflects the fact that our color receptors have maximum sensitivity at three distinct wavelengths of light. Much of the power of color theory comes from distinguishing and linking the physical, biological, and subjective.

In building a theory of psychiatric problems, we need to distinguish various components. One is the pattern of correlation among problems. Another is the set of systems that produce the pattern of correlations. Locations in the correlational space may represent organic structures such as the adrenal glands, biochemical processes such as the synaptic release and uptake of norepinephrine, behavioral systems such as learned helplessness, or cultural systems such as sex roles. Another element is the way people with what we call psychiatric problems perceive and experience their thoughts, feelings, and behaviors. The final element is the way that friends, family, the community, and professionals think about and respond to problems. In the final analysis, a problem is only a problem because someone says it is. Who? On what basis? For what reason? A good theory of psychiatric problems must distinguish the thoughts, feelings, and behaviors addressed by psychiatry from the psychiatric view of them.

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