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The McLean-Harvard First Episode Project: Two-year Stability of DSM-IV Diagnoses in 500 First-Episode Psychotic Disorder Patients

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Abstract

Objective—Since stability of DSM-IV diagnoses of disorders with psychotic features requires validation, we evaluated psychotic patients followed systematically in the McLean-Harvard First Episode Project.

Methods—We diagnosed 517 patients hospitalized in a first psychotic illness by SCID-based criteria at baseline and at 24 months to assess stability of specific DSM-IV diagnoses.

Results—Among 500 (96.7%) patients completing the study, diagnoses remained stable in 74.0%, ranking: *bipolar-I disorder* (BPD; 96.5%) > *schizophrenia* (75.0%) > *delusional disorder* (72.7%) > *major depressive disorder with psychotic features* (MDD; 70.1%) > *brief psychotic disorder* (61.1%) > *psychosis-NOS* (51.5%) ≫ *schizophreniform disorder* (10.5%). Most changed diagnoses (22.4% of patients) were to *schizoaffective disorder* (53.6% of changes in 12.0% of subjects, from: NOS > schizophrenia > schizophreniform = BPD-mixed > MDD > delusional > brief > BPD-manic). Second were to *BPD* (25.9% of changes, 5.8% of subjects, from: MDD > NOS > brief > schizophreniform). Third were to *schizophrenia* (12.5% of changes, 2.8% of subjects, from:

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schizophreniform > NOS > brief = delusional = MDD). These three categories accounted for 92.0% of changes. By logistic regression, diagnostic-*change* was associated with: nonaffective psychosis > auditory hallucinations > youth > male sex > gradual onset.

Conclusions—BPD and schizophrenia were more stable diagnoses than delusional disorder or psychotic-MDD and much more than brief psychosis, psychosis-NOS or schizophreniform disorder. Diagnostic changes mainly involved emergence of affective symptoms and were predicted by several premorbid factors. The findings have implications for revisions of DSM and ICD.

Keywords

diagnosis; diagnostic stability; first-episode; follow-up; prediction; psychotic disorders

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> The task is to use clinical methods for the development of pictures of disease, in which as far as possible all the phenomena of the individual patient's life are evaluated for purposes of diagnosis and the whole course of the illness is taken into account.
>
> Karl Kahlbaum [1]

The importance of establishing sound clinical diagnoses of major psychiatric disorders with both cross-sectional coherence and stability over time has long been recognized.[1–3] Current leading international taxonomies represented by the American Psychiatric Association's DSM and World Health Organization's ICD systems involve standardized descriptive criteria, and consider a longitudinal perspective.[4,5] More objective, biologically-based methods to support psychiatric diagnoses continue to be sought, but remain unlikely to displace clinical, descriptive, phenomenological systems of diagnosis soon.[6]

Psychiatric diagnoses may be especially vulnerable to instability over time, owing to factors that include: [a] insufficient information in individual cases and potential unreliability of information elicited only from patients; [b] symptom-modifying effects of treatment, substance abuse, comorbid medical disorders, and prolonged disability or institutional care as well as premorbid externalizing or internalizing nonpsychotic or personality disorders;[7] [c] changes or evolution of symptomatic manifestations over time; [d] use of standard diagnostic schemes [4,5] that rely on simplified and somewhat arbitrary criteria for required features, symptom-duration, and functional impairment that contrast to the richness and nuances of phenomenology arising early in most disorders.[8–16] In addition, some current diagnostic concepts remain inadequately validated and may simply be unreliable, notably including acute-psychotic and schizoaffective disorders.[17–19]

Given clinical and research requirements for more reliable diagnoses despite limited information and typically brief observation times, it is highly desirable for initial standardized diagnoses to remain stable over time or to follow predictable courses. These considerations encourage testing of diagnostic stability by systematic and prospective, long-term assessments, if only to document levels of longitudinal stability of specific diagnoses and to identify early predictors of later diagnostic change. Several modern studies have considered the broad range of disorders with psychotic features, followed from onset.[13,15,16,20–28] Fewer have considered predictors of diagnostic change investigated among various psychoses at onset or during premorbid or pre-psychotic stages.[22,25,26]

Based on the preceding considerations, we evaluated diagnostic stability of a broad range of initial SCID-based, DSM-IV psychotic-disorders, including a large subgroup of first-psychotic episode mood disorders, over their initial two years, among 500 patients enrolled in the International First-Episode Project. We hypothesized that initial diagnoses would vary in stability over time, and that particular early clinical factors might predict later diagnostic instability. As a secondary aim, we considered how initial affective and psychotic components

change over time and whether new diagnoses are more likely to emerge through newly prominent affective or non-affective features.

Methods

Subjects and diagnostic assessments

Subjects were among 517 patients entering the *International First-Episode Project* based at McLean Hospital and the University of Parma, in 1989–2003, and meeting entry criteria. Project protocols have undergone annually updated review and approval by the McLean Hospital IRB as well as the Ethical Committee of the University of Parma medical center, through 2008. For inclusion, all subjects presented in a first-lifetime episode of psychotic illness and gave written informed consent for participation and anonymous, aggregate reporting of findings. Exclusion criteria at intake were: [a] acute intoxication or withdrawal associated with drug or alcohol abuse, or any delirium; [b] previous psychiatric hospitalization, unless for detoxification; [c] presence of mental retardation (WAIS-tested IQ <70) or other DSM-IV organic mental disorder; [d] index DSM-IV *full-syndromal* illness present >6 months, or any previous syndromal episode; or [e] prior total treatment with an antipsychotic agent for ≥4 weeks or an antidepressant or mood-stabilizer for ≥3 months.

Diagnoses were based on SCID-P assessments at baseline and again at 24 months by highly trained and experienced diagnosticians, blinded at 24 months to initial diagnoses, in a total of 500 cases (completion rate of 500/517 = 96.7%). The intake vs. year-two, SCID-based, diagnoses were the basis of the present analyses. In addition, we considered other premorbid or baseline clinical features obtained by investigators not held blind to the initial SCID-based diagnosis, from medical records, clinical notes, and reports of interviews with family members, treating and primary-care clinicians, considering duration of episodes or other clinical features as required by DSM IV. We also estimated age-at-onset or occurrence of primary illnesses as well as the timing of premorbid psychiatric clinical characteristics, and of neuromedical as well as substance-use co-morbidities both in antecedent and prodromal phases. We updated all diagnoses to meet DSM-IV-TR criteria in 2007. These clinical assessment methods were detailed previously.[29]

Data analyses

We compared subjects with SCID-based diagnoses considered stable vs. changed by 24 months, using one-way ANOVA (F) for continuous variables, and contingency tables (χ^2 or Fisher exact-*p*) for categorical factors, with defined degrees-of-freedom (df). Measures with at least suggestive differences ($p<0.10$) in initial bivariate comparisons were entered into a logistic regression model to identify factors independently associated with diagnostic change, reporting Odds Ratios (OR) with their 95% confidence intervals (CI). Averages are means with standard deviations (±SD). Analyses were based on commercial statistical programs (Stata-8®, Stata Corp., College Station, TX; Statview-5®, SAS Institute, Cary, NC).

Results

Subject characteristics and initial diagnoses

Of 517 first-episode subjects assessed initially, 17 (3.3%) were lost to follow-up (one died, one moved to another country, and 15 withdrew consent or were otherwise lost to follow-up), leaving 500 (96.7%) for analysis. Most subjects were men (55.0%) and estimated age-at-onset of first-psychotic syndromes averaged 31.7 ± 13.7 years. Lifetime DSM-IV co-morbid diagnoses at baseline included: 51.2% with substance-use disorders, 22.2% Axis II disorders, and 17.6% with any anxiety disorder (Table 1). Based on initial diagnoses, initial age ranked: schizoaffective ≥ schizophreniform ≥ psychosis-not-otherwise-specified (NOS) ≥

schizophrenia ≥ bipolar-mixed ≥ bipolar-manic > brief psychosis > major depression with psychotic features ≥ delusional disorder (not shown). Initial DSM-IV diagnoses included a majority (n=308, 61.6%) of *affective-psychotic* disorders (bipolar I [BPD] or major depressive [MDD]), fewer (n=191, 38.2%) *nonaffective* diagnoses (brief, delusional, schizophreniform, schizophrenia, or psychosis-NOS, and rare (n=1, 0.20%) *schizoaffective* disorder.

Changes in diagnosis at follow-up

Among the 500 subjects analyzed (406 US and 94 Parma), initial diagnoses changed in 112 (22.4%). The proportion of initial diagnoses sustained at follow-up (n=388, 77.6%), or the *positive predictive value* of initial diagnoses,[30] was 1.56-times greater among subjects with major affective disorders with psychotic features (stable/all affective cases = 277/308, 89.9%) than those diagnosed with non-affective psychosis (stable/all non-affective cases = 110/191, 57.6% ; χ^2 [df=1] = 71.8, $p<0.0001$, omitting one initially schizoaffective case; Tables 2 and 3).

Most new diagnoses were of *schizoaffective disorders* (60 cases, 53.6% of the 112 revised diagnoses: 46 from initial non-affective categories, and 14 from initial affective cases including 8 initial BPD diagnoses, and 6 initially considered MDD). New schizoaffective diagnoses involved later-appearing affective features in previously nonaffective conditions 5.3-times more often than the opposite (46/191 [24.1%] initially nonaffective vs. 14/308 [4.54%] affective; χ^2 [df=1] = 42.5, $p<0.0001$). The second most prevalent new diagnosis was *BPD* (25.9% of new diagnoses, involving 29 cases: 16 initially diagnosed MDD, 6 psychosis-NOS, 5 brief psychotic disorder, and 2 schizophreniform). Third most likely were new diagnoses of *schizophrenia* (12.5% of changed diagnoses in 14 cases: 6 initially considered schizophreniform, 5 psychosis-NOS, and 1 each from delusional, brief and MDD). These three categories accounted for 103/112 new diagnoses (92.1%).

Initial DSM-IV diagnoses of BPD held up best, at 96.5% (223/231), as only 3.46% (8/231) changed (all to schizoaffective disorder; 7/8 following mixed-state presentations). Also among major affective disorder diagnoses, 70.1% (54/77) of initial diagnoses of psychotic-MDD remained stable: 29.9% (23/77) changed (16 to BPD, 6 to schizoaffective disorder, one to schizophrenia). Among non-affective diagnoses, schizophrenia persisted at 75.0%, and delusional disorder at 72.7%. Most short-duration or initially nonspecific (NOS) disorders changed to various alternative diagnoses, with retention rates of 61.1% for brief psychosis, 51.5% for psychosis-NOS, and only 10.5% of initial schizophreniform diagnoses (Figure).

Of 112 diagnostic changes, 81 (72.3%) involved diagnoses initially considered *non-affective* (42.4% of 191 cases; Tables 2 and 3). These included 46/81 (56.8%) shifting to *schizoaffective* disorders, from: initial psychosis-NOS (n=19), schizophrenia (n=12), delusional disorder (n=5), schizophreniform disorder (n=7), or brief psychosis (n=3). Changes to *alternative nonaffective* categories occurred in 19/81 (23.5%): from brief psychosis to psychosis-NOS (n=4), schizophrenia (n=1) or delusional disorder (n=1); psychosis-NOS to schizophrenia (n=5) or delusional disorder (n=1); schizophreniform to schizophrenia (n=6); and from delusional disorder to schizophrenia (n=1). There were 16 shifts (19.8%) to new *affective* diagnoses: from psychosis-NOS to BPD (n=6) or MDD (n= 1), schizophreniform disorder to MDD (n=2) or BPD (n= 2), and 5 from brief psychosis to BPD.

There were only 31 (27.7% of 112) changes of initial affective-disorder diagnoses (of 308 cases: 10.1%), including 14 (45.2%) new schizoaffective diagnoses arising from: BPD (n=8) or MDD (n=6). Shifts within affective categories (n=16) all involved new diagnoses of BPD from initial psychotic MDD, owing to later manic (n=10) or mixed episodes (n=6). The one new nonaffective diagnosis was of schizophrenia from initial psychotic MDD.

Initial diagnosis as predictor of final diagnoses

Bayesian analyses [30] of final vs. initial diagnoses (not shown) indicate that BPD, in particular (96.5%), and to a lesser extent, schizophrenia (75.0%), had relatively high levels of diagnostic stability or *positive predictive value* of initial SCID-based diagnoses. In contrast, initial SCID-based schizophreniform, psychosis-NOS, and psychotic-MDD, and brief psychosis (10.5%–61.1%**)** diagnoses had lower consistency or predictive power (Table 2). Moreover, schizoaffective disorders were rarely diagnosed initially, indicating low diagnostic sensitivity without prolonged observation (Table 2). *Sensitivity* (diagnosed at both baseline and 24 months, or "true positive" rate) exceeded 90% only for bipolar I disorder and initially rare schizoaffective disorder (100%), with lower sensitivity for schizophrenia (75.0%), delusional disorder (72.7%), and MDD (70.1%), and much lower sensitivity for all other initial diagnoses, ranging from 61.1% for brief psychosis to 10.5% for schizophreniform psychosis. *Specificity* (not diagnosed at 24 months/not diagnosed at baseline, or "true negatives") in all categories equaled or exceeded 93%. These findings indicate that initial diagnoses vary greatly in their durability over time, but that *not* having a diagnosis initially implies a low risk of being so-diagnosed later.

Predictors of diagnostic instability

Initial bivariate contrasts indicated that subjects with changed vs. stable diagnoses (in descending order of statistical significance) were: [a] 2.5-times more likely to have an *initial non-affective diagnosis*, [b] more likely to present with *initial auditory hallucinations*, [c] more likely to present with *initial Schneiderian first-rank symptoms* (FRS) of any type, [d] more likely to present with FRS of *thought passivity-experience*, [e] more likely to present with FRS of *delusional-perception*, [f] 4.7 years *younger* at onset, [g] more likely to have had a *gradual onset*, [h] 1.3-times more often *men* than women, [i] more likely to have had recent *homicidal behavior*, [j] 1.7-times less likely to present with *initial cycloid features*, and [k] more likely to have had a *previous head injury* during pre-psychotic either antecedent or prodromal phases (Table 4A).

Several of these factors were sustained as independently associated with diagnostic change in a multivariate logistic regression model, with factors ranking by *p*-value as: [a] *nonaffective* vs. affective psychotic disorders > [b] *initial auditory hallucinations* (including first-rank and other types) > [c] *younger onset-age* > [d] *male sex* > [e] *gradual onset* vs. acute or subacute onset (Table 4B). Additional factors *not associated* with changes in diagnosis included various pre-psychotic or antecedent or prodromal co-morbid psychiatric disorders (including cyclothymia, dysthymia, post-traumatic stress disorder [PTSD] or other anxiety disorders, eating disorders, or Axis II personality disorders, including clusters A–C, any form of substance abuse), as well as medical or neurological illnesses or early learning disability, and study-site (*see*Table 4 footnote).

Discussion

Study strengths and limitations

Strengths of this study include its prospective and systematic follow-up of a large cohort of first-episode patients diagnosed with a broad range of DSM-IV affective and nonaffective psychotic disorders, based on early and 24-month full SCID assessments of 500 of 517 enrolled subjects (96.7%), with final SCID diagnostic assessments blinded to initial diagnosis. Notable limitations include relatively small samples of subjects (<30 persons) in several categories at intake (especially brief, delusional and schizophreniform disorders), evidently reflecting their limited prevalence among patients sampled in this cohort. Such power limitations precluded statistical analysis of predictive factors for specific diagnostic changes, and the overall analyses reported may not apply to all disorders.

Stability of specific initial diagnoses

A main finding is that *bipolar I disorder* with psychotic features (BPD) was a highly robust diagnosis, stable for two years in 96.5% of cases, with changes only to schizoaffective disorder, particularly after mixed-state onset (Figure; Table 2). *Schizophrenia* was second-most stable (75.0%), also changing only to schizoaffective disorder. *Delusional disorder* was somewhat less stable (at 72.7%), as 27.3% of such cases were later diagnosed with schizoaffective disorder or schizophrenia. Although uncommon (4.4%), delusional disorder diagnoses remained stable in nearly three-quarters of cases (72.7%; Table 2). It has been associated with male sex and evolution into schizophrenia or schizoaffective diagnoses, with emergence of hallucinations or formal thought disorder, or affective features.[25] Its relationship to the schizophrenias and paraphrenias has remained ambiguous for a century.[2]*Major depressive disorder* with psychotic features (MDD) was similarly stable (70.1%), shifting, as expected, to BPD as later manic or mixed episodes arose (20.8%), with fewer new schizoaffective diagnoses (7.8%), and rarely schizophrenia (1.3%). The diagnostic stability of BPD compared to all other psychotic disorders may reflect genetic-psychobiological factors, or the relatively consistent nature of mania and mixed states vs. more heterogeneous acute or even chronic psychotic symptoms.

Schizoaffective disorder, though least prevalent at baseline (0.20%), accounted for 12.2% of all 500 diagnoses at two-years, and 53.6% of new diagnoses—a 61-fold increase. Most new diagnoses of schizoaffective disorder arose due to newly-perceived affective features among initially apparently nonaffective disorders (Table 3). Emergence of affective features led 24.1% of initial nonaffective cases to be diagnosed later as schizoaffective, whereas only 4.5% of initial affective-disorder illnesses later manifested sustained psychotic features. That is, later emergence of affective features not present at intake was a 5.4-time more likely than late-emerging psychotic features as a route to schizoaffective diagnoses (Table 3). In other studies, first-episode psychosis patients have received schizoaffective diagnoses during later follow-up, although relative contributions of later-emerging nonaffective vs. affective features were not specified.[12,21–23]

A striking example of such a change occurred with initial diagnoses of *schizophrenia*, 25.1% of which changed to schizoaffective disorder by 24 months. This incidence of diagnostic change was unexpected, particularly given the DSM requirement of six continuous months of illness to support the diagnosis of schizophrenia.[4] Even in schizophrenia, some symptoms may require 12–24 months to stabilize.[31,32] For both disorders, prolonged observation, perhaps for more than six months, may be required to establish a diagnosis with confidence. DSM-IV schizoaffective disorder, as currently conceived, is widely considered to be similar to schizophrenia, including in severity, chronicity, and disability, high rates of co-morbidity and relatively young onset.[13,16,19,21,33] This schizophrenia-like picture of contemporary schizoaffective disorders differs from Kasanin's [34] original concept of *acute* admixtures of features, and recent formulations that include an episodic course.[26] Moreover, such “intermediate” disorders, lying between schizophrenia and manic-depressive disorders, challenge the fundamental Kraepelinian nonaffective/affective dichotomous core of current DSM and ICD diagnostic systems.[2,4,5,16,35]

The ambiguous category *psychotic disorder-NOS* was expected to change over time, as it did in 48.5% of cases so-diagnosed initially. Far more such cases shifted to affective categories (81.3%) than to nonaffective diagnoses (18.8%; Table 2), suggesting that affective features were not compelling initially. Despite its instability, such a working category may be required even as psychiatric diagnosis becomes more reliable, particularly as some acute psychotic disorders may not be fully expressed at onset.

Acute psychoses and other diagnoses of uncertain reliability changed in more than one-third of cases, including initial *schizophreniform* diagnoses (89.5%), *psychotic disorder-NOS* (48.5%), and *brief psychotic* disorders (38.9%; Tables 1 and 2; Figure). These less-stable diagnoses shifted to various other categories (Table 2). Especially striking were high levels of diagnostic instability of psychotic disorders expected to be acute, time-limited, and prognostically favorable, particularly *schizophreniform disorder*. Initially, this diagnosis was not common, but 89.5% of such cases changed to other diagnoses at two years, particularly schizoaffective disorder and schizophrenia (Table 2). Other studies have also found that schizophreniform disorder associated with later schizophrenia or schizoaffective diagnoses, as well as being more common in men than women.[22,23,25,27,36] In contrast to schizophreniform disorder, DSM-IV *brief psychotic disorder* was a moderately stable category since only 38.9% later changed, usually to BPD or psychosis-NOS. Unlike schizophreniform disorder, brief psychoses often are relatively acute and time-limited, may be episodic but rarely follow a chronic course, and often appear in relatively well-functioning women.[11,12,15,17,18,24,26,37] Brief psychosis,[4] as well as "acute and transient psychoses" of ICD-10,[5] may be more valid constructs than schizophreniform disorder, and appears to be associated with a more episodic-favorable course. In contrast, the DSM schizophreniform category appears to select more for a chronic later course. This difference may reflect their dissimilar DSM-IV duration criteria (up to six months for schizophreniform vs. <1 month for brief psychoses), which may be useful but fail to take into account other descriptive differences. For example, the acute and transient psychoses of ICD-10,[5] as well as the related concepts of cycloid psychoses [38,39] and twilight psychogenic or epileptoid psychotic states.[40] that might serve to guide earlier definitive diagnoses.[41]

Comparisons with earlier studies

Several prospective studies have considered diagnostic stability of first-episode psychotic illnesses, although large, broad samples followed-up for a year or longer,[10,15,21,22,26,27] and evaluations of factors associated with diagnostic stability are rare.[22,26,27] These include evidence that BPD is a very robust diagnosis. A detailed review of this work is beyond the scope of this report. However, the cited studies [10,15,21,22,26,27] averaged with our findings (Table 2) found DSM-IV schizophrenia to be a particularly stable initial diagnosis (90.6±9.4%), BPD to be similarly stable (87.5±8.4%), MDD with psychotic features less table (54.4±38.9%), and the pool of schizophreniform, schizoaffective, and psychosis-NOS diagnoses, the least stable diagnoses (34.1±26.6% of cases).

Predictive factors

Predictive factors associated with *diagnostic instability*, in addition to an initial provisional or unstable diagnosis (such as schizophreniform, NOS or brief categories), included nonaffective initial disorders, any type of initial auditory hallucinations, younger age at syndromal onset, male sex, and gradual-onset (Table 4). Comparable studies are rare. Schwartz et al.,[22] found that change between 6 and 24 months to schizophrenia or schizoaffective diagnoses was associated with: poor adolescent adjustment, lack of early substance abuse, psychosis ≥3 months before hospitalization, more initial negative symptoms, prolonged hospitalization, and antipsychotic treatment at discharge. For Schimmelmann et al.,[26] higher initial CGI and lower premorbid GAF scores predicted shifts from schizophreniform disorder to schizophrenia or schizoaffective disorder. Whitty et al.,[27] associated diagnostic change in general with less education, milder initial psychopathology, and co-morbid alcohol or substance abuse. Overall, relationships of substance-abuse to risk or timing of new psychotic disorders remain unclear and the evidence inconsistent.[22,26,28]

Associations of particular early characteristics with later specific psychotic-disorder diagnoses encourage further study of potential predictive diagnostic value of antecedent and prodromal

features,[15] to guide earlier diagnosis and therapeutic interventions aimed at limiting morbidity and disability.[42,43] However, challenges of evaluating pre-psychotic or premorbid phenomena during both antecedent and prodromal phases are great, especially in young patients, and early symptoms can obscure or delay diagnosis of psychotic disorders, particularly when prominent nonspecific features suggest neurotic, personality, or conduct disorders.[9,14,16,17,,21,27,36,37,44–49]

Conclusions

Our findings underscore the wide diversity of diagnostic stability among DSM-IV psychotic-disorder categories, based on two years of observation from onset, and suggest four major diagnostic nodes, based on diagnostic stability: [a] *high stability*: BPD > [b] *moderate stability* (schizophrenia, MDD with psychotic features, delusional disorder) ≫ [c] *low stability* (particularly schizophreniform, NOS, and brief psychosis); and [d] the *schizoaffective disorders*, which represent a special problem owing to a lack of consensus concerning diagnostic criteria. DSM-IV BPD was particularly stable, and appears to be even more robust as an initial diagnosis than schizophrenia or other psychotic disorders. Early allocation of individual patients to a particular diagnosis or to such diagnostic nodes might usefully consider the details of early psychopathology as well as presenting clinical features.

Most changes were to the ambiguous "schizoaffective" diagnoses, that usually were anticipated by initial mixed-states of BPD as well as later-emerging affective components of initially nonaffective psychotic illnesses, typically with unfavorable outcomes. This category challenges the standard psychotic/affective Kraepelinian dichotomy underlying both DSM-IV and ICD-10, and requires further study. The diagnosis of DSM-IV schizoaffective disorder may require prolonged observation, possibly more than 12 months, and may include acute and episodic as well as chronic forms.

We also recommend critical re-evaluation of the DSM-IV categories of schizophreniform and brief psychotic disorders and related concepts. Development of improved diagnostic criteria for such supposedly good-prognosis and time-limited disorders, and more generally, may require integration of categorical and dimensional approaches, with due consideration of premorbid and prodromal features and long-term outcomes.[1,50–54] Finally, we specifically encourage continued efforts to devise diagnostic methods and criteria to identify patients with psychotic disorders of favorable course as early as possible, if only to avoid unnecessarily pessimistic prognoses and overuse of antipsychotic medications and other costly or risky interventions.[39]

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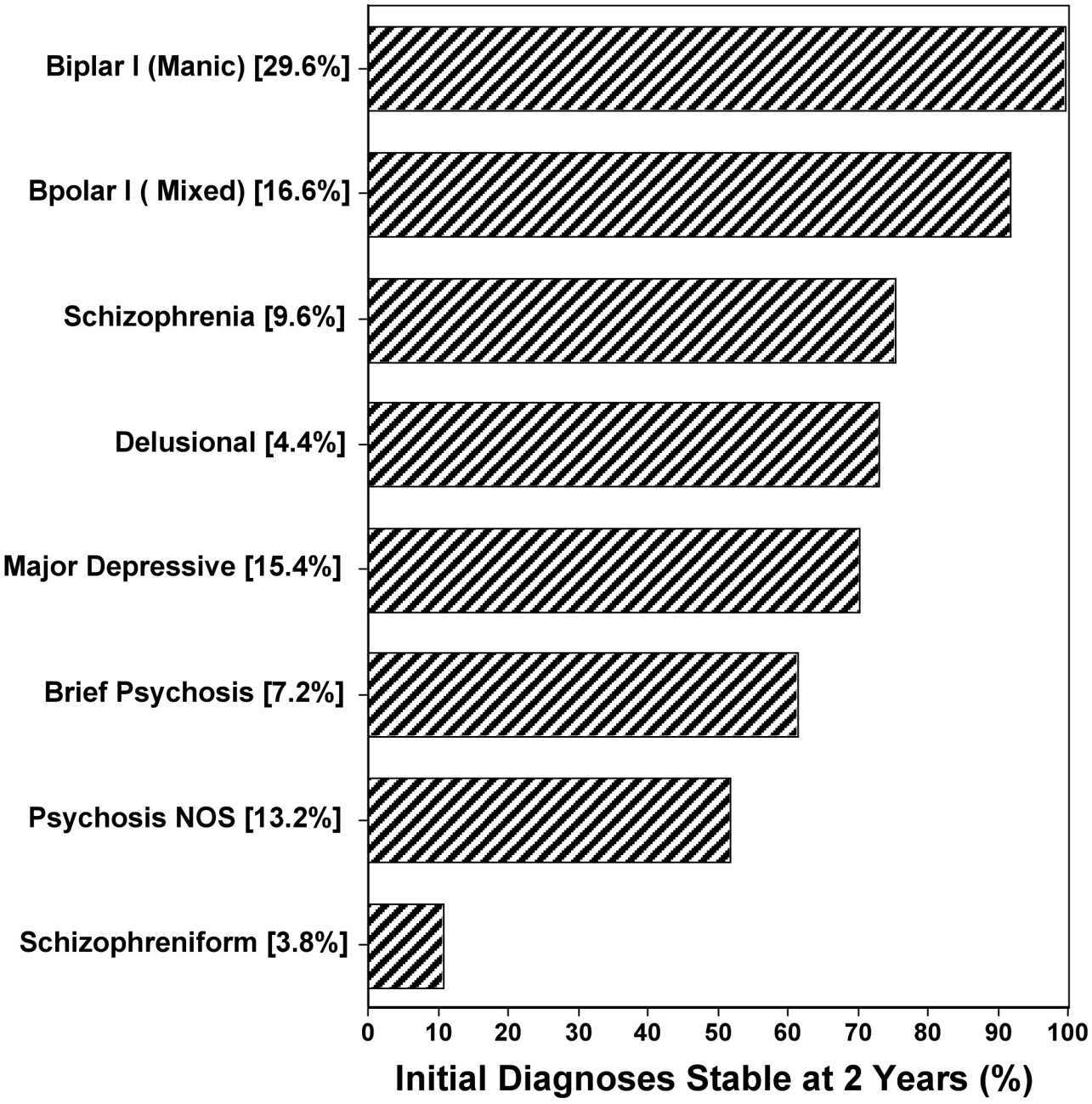

Figure.

Diagnostic stability of initial DSM-IV diagnoses (with prevalences [%]) among 500 first-episode psychotic disorder patients at first-lifetime hospitalization, ranked by diagnostic stability for the same subjects at two-years follow-up (% remaining unchanged). One case initially and finally diagnosed as schizoaffective disorder is omitted. Note that diagnostic stability ranged from 96.5% for bipolar I disorder (best for pure mania) to only 10.5% for schizophreniform disorder.

Table 1
Characteristics of 500 first-episode DSM-IV psychotic disorder patients

Characteristic	Value
Subjects N [%])	
All cases	500 (100%)
Men	275 (55.0%)
Women	225 (45.0%)
Age at onset (years)	31.7 ± 13.7
Comorbidties	
Substance use disorders	256 (51.2%)
Axis II personality disorders	111 (22.2%)
Anxiety disorders	88 (17.6%)
Prevalence of initial DSM-IV diagnoses (%, by rank)	
Any Bipolar I	231 (46,2%)
Bipolar I (initially manic)	148 (29.6%)
Bipolar I (initially mixed)	83 (16.6%)
Major Depressive Disorder	77 (15.4%)
Psychosis NOS	66 (13.2%)
Schizophrenia	48 (9.6%)
Brief Psychotic Disorder	36 (7.2%)
Delusional Disorder	22 (4.4%)
Schizophreniform Disorder	19 (3.8%)
Schizoaffective Disorder	1 (0.2%)
Changed initial diagnoses (%, by rank)	
Schizophreniform Disorder	17/19 (89.5%)
Psychosis NOS	32/66 (48.5%)
Major Depressive Disorder	23/77 (42.9%)
Brief Psychotic Disorders	14/36 (38.9%)
Delusional Disorder	6/22 (27.3%)
Schizophrenia	12/48 (25.0%)
Bipolar I (initially mixed)	7/83 (8.4%)
Bipolar I (initially manic)	1/148 (0.7%)
Any Bipolar I Disorder	8/231 (3.5%)
Schizoaffective Disorder	0/1 (0.0%)

NOS = not otherwise specified.

Diagnoses are based on initial SCID assessments.

Overall diagnostic stability averaged 74.0% (370/500).

Table 2

Changes in DSM-IV diagnosis: First-episode psychotic disorders

Initial diagnosis (N [%])	Final Diagnoses (N [%])
Schizophreniform disorder (19 [3.8%])	Schizoaffective disorder (7 [36.8%]
	Schizophrenia (6 [31.6%])
	Schizophreniform disorder (2 [**10.5%**]
	Major depressive disorder (2 [10.5%])
	Bipolar I disorder (2 [10.5%])
Psychosis NOS (66 [13.2%])	*Psychosis NOS* (34 [**51.5%**])
	Schizoaffective disorder (19 [28.8%])
	Bipolar I disorder (6 [9.1%])
	Schizophrenia (5 [7.6%])
	Delusional disorder (1 [1.5%])
	Major depressive disorder (1 [1.5%])
Brief psychotic disorder (36 [7.2%])	*Brief psychotic disorder* (22 [**61.1%**])
	Bipolar I disorder (5 [13.9%])
	Psychosis NOS (4 [11.1%])
	Schizoaffective disorder (3 [8.3%])
	Delusional disorder (1 [2.8%])
	Schizophrenia (1 [2.8%])
Major depressive disorder (77 [15.4%])	*Major depressive disorder* (54 [**70.1%**])
	Bipolar I disorder (16 [20.8%])
	Schizoaffective disorder (6 [7.8%])
	Schizophrenia (1 [1.3%])
Delusional disorder (22 [4.4%])	*Delusional disorder* (16 [**72.7%**])
	Schizoaffective disorder (5 [22.7%])
	Schizophrenia (1 [4.5%])
Schizophrenia (48 [9.6%])	*Schizophrenia* (36 [**75.0%**])
	Schizoaffective disorder (12 [25.0%])
Bipolar I disorder (mixed; 83 [16.6%])	*Bipolar I disorder* (76 [**91.6%**])
	Schizoaffective disorder (7 [8.4%])
Bipolar I disorder (manic; 148 [29.6%])	*Bipolar I disorder* (147 [**99.3%**])
	Schizoaffective disorder (1 [0.68%])
Schizoaffective disorder (1 [0.2%])	*Schizoaffective disorder* (1 [**100%**])

Listed in rank-order of worst-to-best diagnostic stability among N=500 patients with SCID-based initial and 2-year assessments. *NOS* = psychotic disorder, not otherwise specified. Boldface indicates the proportion of initial diagnoses remaining unchanged (sensitivity).

Table 3

Categorical outcomes of diagnoses during follow-up

New Categories	*From Non-Affective*	*From Affective*	*From Schizoaffective*	*From All Sources*
To affective	16/81 (19.8%)	16/31 (51.6%)	0 (0.00%)	32/112 (6.40%)
To non-affective	19/81 (23.5%)	1/31 (3.20%)	0 (0.00%)	20/112 (4.00%)
To schizoaffective	46/81 (56.8%)	14/31 (45.2%)	0 (0.00%)	60/112 (12.0%)
All changes	81/191 (42.4%)	31/308 (10.1%)	0 (0.00%)	112/500 (22.4%)
Stable diagnoses	1100191 (57.6%)	277/308 (89.9%)	1/1 (100%)	388/500 (77.6%)
Baseline Totals	191/191 (100%)	308/308 (100%)	1/1 (100%))	500/500 (100%)

Diagnostic changes (22.4% of all cases) are specified in Table 2. Initially, there were 308 diagnoses of affective psychoses (61.6%), 191 of non-affective disorders (38.2%), and 1 of schizoaffective disorder (0.20%). At follow-up, the distribution was: affective (309; 61.8%), nonaffective (130; 26.0%), and schizoaffective (61; 12.2%), indicating a 60-fold increase of schizoaffective diagnoses, a 6.4% increase of affective disorder diagnoses, and 12.2% loss among nonaffective diagnoses (χ^2 [df=4] = 393, p<0.0001).

Table 4

Factors associated with diagnostic stability

A. Bivariate analyses

Factors	Stable Diagnoses	Changed Diagnoses	F or χ^2	*p*-value
Initial non-affective diagnoses (%)	28.4	72.3	71.2	<0.0001
Auditory hallucinations (%)	42.3	65.2	18.3	<0.0001
First-rank symptoms (%)				
Any	75.3	92.0	14.6	0.0001
Passivity	16.0	26.8	6.76	0.009
Delusional perception	54.4	67.0	5.62	0.02
Onset age (years)	32.8 ± 14.5	28.1 ± 9.6	10.2	0.002
Gradual onset (%)	13.7	15.9	9.53	0.008
Male sex (%)	51.8	66.1	7.15	0.008
Homicidal behavior within 1 wk (%)	11.1	20.5	6.78	0.009
Cycloid features (%)	19.4	11.6	3.65	0.06
Prior head trauma (%)	6.96	12.5	3.55	0.06

B. Multivariate analysis

Factors	Odds Ratio [95% CI]	χ^2	*p*-value
Nonaffective disorders	5.59 [3,45–9.07]	48.8	<0.0001
Auditory hallucinations	2.05 [1.27–3.31]	8.67	0.003
Younger at onset	1.03 [1.03–1.05]	5.28	0.022
Male sex	1.64 [1.01–2.68]	4.01	0.045
Gradual onset	1.80 [1.01–3.20]	3.99	0.046

A. Data are percentages of subjects with the stated features, or means ± SD; continuous variables are tested with ANOVA (df=1; 499); categorical variables were tested with contingency tables (χ^2 [df=1], with factors in descending order by *p*-values. Other factors *not* associated with diagnostic stability included: [a] months from initial symptoms to first syndromal illness; [b] pre-psychotic anxiety disorders or PTSD; [c] personality disorder or cluster-type; [d] other Schneiderian first-rank features; [e] Gapgras misidentification features; [f] visual, olfactory, gustatory, tactile, or somatosensory hallucinations; [g] substance abuse (drug or alcohol); [h] previous eating disorder; [i] head injury history; [j] significant prior or intake medical/surgical co-morbidity, epilepsy, or allergy; [k] prevous migraine; [l] prior epileptic seizures; [m] early learning disorder; or [n] study-site.

B. Logistic regression model: outcome is diagnostic change; factors are ranked by *p*-values.