



The special treatment of first rank auditory hallucinations and bizarre delusions in the diagnosis of schizophrenia

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ABSTRACT

The presence of a single first-rank auditory hallucination (FRAH) or bizarre delusion (BD) is sufficient to satisfy the symptom criterion for a DSM-IV-TR diagnosis of schizophrenia. We queried two independent databases to investigate how prevalent FRAH and BD are in schizophrenia spectrum disorders and whether the diagnosis depends on them. FRAH was common in both datasets (42.2% and 55.2%) and BD was present in the majority of patients (62.5% and 69.7%). However, FRAH and BD rarely determined the diagnosis. In the first database, we found only seven cases among 325 patients (2.1%) and in the second database we found only one case among 201 patients (0.5%) who were diagnosed based on FRAH or BD alone. Among patients with FRAH, 96% had delusions, 14–42% had negative symptoms, 15–21% had disorganized or catatonic behavior, and 20–23% had disorganized speech. Among patients with BD, 88–99% had hallucinations, 17–49% had negative symptoms, 20–27% had disorganized or catatonic behavior, and 21–25% had disorganized speech. We conclude that FRAH and BD are common features of schizophrenia spectrum disorders, typically occur in the context of other psychotic symptoms, and very rarely constitute the sole symptom criterion for a DSM-IV-TR diagnosis of schizophrenia.

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1. Introduction

In the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), the diagnosis of schizophrenia can be made with just one criterion A symptom if that symptom is auditory hallucinations characterized by running commentary (RC) or voices conversing (VC), or bizarre delusions (BD) (APA, 2000). RC and VC are first-rank symptoms (FRS), proposed to distinguish schizophrenia from other psychoses (Schneider, 1959), and we will use the term first-rank auditory hallucinations (FRAH) to refer to these. BD, according to the DSM-IV-TR, are delusions that are “clearly implausible and not understandable and not derived from ordinary life experiences.” Some BD involve the delusion of control by others, including the control of the person’s thought (thought insertion, thought withdrawal, and thought broadcasting). These delusions are also referred to as alien control or passivity phenomena. FRAH and BD were thought to be particularly characteristic of schizophrenia and were thus accorded special diagnostic significance in the DSM, beginning with the DSM-III-R (APA, 1987).

There are problems, however, with rating FRAH and BD. The inter-rater reliability for BD is variable, with kappa coefficients ranging from 0.28 to 0.92 (Kendler et al., 1983; Flaum et al., 1991; Goldman et al.,

1992; Spitzer et al., 1993; Mojtabai and Nicholson, 1995; Tanenberg-Karant et al., 1995; Nakaya et al., 2002). The definition of BD is ambiguous, particularly regarding whether emphasis should be placed on form vs. content, and the validity of BD as currently operationalized in the DSM has been questioned (Mullen, 2003; Cermolacce et al., 2010). Inter-rater reliability for FRAH is higher: Peralta and Cuesta (1999) report kappa values of 0.63 for RC and 0.70 for VC; Carpenter and Strauss (1974) report $r = 0.76$ for RC and for VC; and in the International Pilot Study of Schizophrenia (IPSS), the mean reliability for examiners within a study center was high ($r = 0.87$) for VC (Wing and Nixon, 1975). However, reliability between study centers was still highly variable ($r = 0.37$ to 0.95) (Wing and Nixon, 1975). Determining the prevalence of FRAH in schizophrenia has also been problematic, with estimates ranging from 10 to 40% for RC, 0 to 34% for VC, and 22 to 48% for cases with at least one FRAH (Mellor, 1970; Carpenter and Strauss, 1974; Zarrouk, 1978; Chandrasena and Rodrigo, 1979; Bland and Orn, 1980; Lewine et al., 1982; Ahmed and Naeem, 1984; Marneros, 1984; Gureje and Bamgboye, 1987; Malik et al., 1990; Salleh, 1992; Peralta and Cuesta, 1999; Thorup et al., 2007; Shinn et al., 2012). The variations in FRAH estimates may reflect different clinical and cultural contexts (Chandrasena, 1987), and may be due to the variable use of narrow or wide interpretations of FRAH (Koehler, 1979; O’Grady, 1990), as well as the use of different diagnostic criteria for schizophrenia when determining FRAH base rates (Nordgaard et al., 2008). Furthermore, neither FRAH (Shinn et al., 2012) nor BD (Carpenter et al., 1973; Goldman et al., 1992) are pathognomonic of schizophrenia. Finally, FRS and BD hold little prognostic value (Strauss

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and Carpenter, 1972; Carpenter et al., 1973; Hawk et al., 1975; Brockington et al., 1978; Kendell et al., 1979; Stephens et al., 1982; Goldman et al., 1992; Thorup et al., 2007; Nordgaard et al., 2008).

The DSM-5 Psychotic Disorders Work Group has proposed to remove the special status of FRAH and BD from the diagnostic criteria for schizophrenia (Tandon, 2012; Tandon and Carpenter, 2012). This prompted us to ask whether this affects the “caseness” of schizophrenia. Specifically, how many cases would no longer be diagnosed with schizophrenia if special treatment of FRAH or BD was eliminated? Two studies previously answered this question in relation to BD using the DSM-III-R. Goldman et al. (1992) studied 214 consecutively admitted inpatients with psychosis and found that of the 152 broad-spectrum schizophrenia cases (schizophrenia, schizoaffective disorder, and schizophreniform disorder), 4.6% were diagnosed on the basis of BD alone. Tanenberg-Karant et al. (1995) studied 196 first-admission patients with psychosis and found that of the 96 cases with schizophrenia spectrum disorders, 7.5% were due to the sufficiency of BD. These rates have not been estimated using subsequent versions of the DSM, and the prevalence of cases diagnosed solely on the basis of FRAH has never been examined. Here, we investigated the prevalence of cases diagnosed with FRAH or BD as the solitary psychotic symptom using the DSM-IV-TR.

2. Methods

We recently published data on auditory hallucinations from a database of 569 patients with schizophrenia ($n = 172$), schizoaffective disorder ($n = 153$), and bipolar psychosis ($n = 244$) (Shinn et al., 2012) at McLean Hospital. Patients were men and women, ages 18–65 years old, originally recruited for a genotype-phenotype study of psychotic and mood disorders. Individuals with disorders attributable to a general medical condition, a neurologic illness, or substance intoxication or withdrawal were excluded. We included schizoaffective disorder in addition to schizophrenia in this analysis because the special treatment of FRAH and BD pertains to the diagnostic algorithm for both of these disorders; this subset of patients ($n = 325$; 41.5% female) had a mean age of 38.3 ± 12.2 years, mean age at psychosis onset of 21.2 ± 6.7 years, and mean duration of illness of 16.7 ± 11.9 years.

We recently published the initial results from a genotype-phenotype study of psychotic and mood disorders at Vanderbilt University (Woodward et al., 2012). For this study, we selected a sample of 201 patients with schizophrenia ($n = 109$), schizophreniform disorder ($n = 57$) and schizoaffective disorder ($n = 35$), which was 34.3% female and had a mean age of 34.7 ± 12.8 years.

In both the McLean and Vanderbilt studies, participants underwent a comprehensive clinical research evaluation, including the Structured Clinical Interview for DSM-IV-TR (SCID) (First et al., 1995). In coding SCID items for running commentary (B17), two or more voices conversing (B18), and BD (B15), only scores of 3 (threshold/true) were regarded affirmatively; scores of 1 (absent/false), 2 (subthreshold), or 4 (inadequate information) were coded as negative. For each of the three symptoms, we identified cases in which the SCID item of interest was rated 3 and all other symptoms in the SCID psychosis module were rated absent. Given the frequency with which patients experience both RC and VC, we also identified cases in which B17 and B18 were both rated 3 with all other psychotic symptoms rated absent.

We assessed the presence of BD in two ways. We counted all delusion items B1–B14 that were judged to be bizarre (SCID item B15 = 3). As described, however, the operationalization of BD in the SCID for DSM-IV-TR is ambiguous and BD can be difficult to judge. According to the DSM-IV-TR (p. 299), “Delusions that express a loss of control over mind or body are generally considered to be bizarre; these include a person’s belief that his or her thoughts have been taken away by some outside force (‘thought withdrawal’), that alien thoughts have been put into his or her mind (‘thought insertion’), or that his or her body or actions are being acted on or manipulated by some outside force (‘delusions of control’).” Thus, in addition to item B15, we counted all unequivocal delusions of control (DC; B11), thought insertion (TI; B12), thought withdrawal (TW; B13), or thought broadcasting (TB; B14) as BD. This allowed us to combine all SCID items B11–15 scored as present into a total count of all BD cases.

In addition, to assess how common FRAH and BD are, even if accompanied by other criterion A symptoms, we calculated prevalence rates for RC, VC, and BD. To determine the association between FRAH and BD with other criterion A symptoms, we calculated the percent overlap of FRAH and BD with other criterion A symptoms. Finally, we looked at the number of criterion A symptoms that are present to meet a diagnosis of a schizophrenia spectrum disorder. As the McLean and Vanderbilt datasets were collected under different study protocols, we performed these analyses separately for the two datasets rather than combine them.

For both McLean and Vanderbilt datasets, patients were assessed by trained research staff. The 325 SCID assessments in the McLean dataset were completed by a total of 18 raters (9 psychiatrists, 2 PhD psychologists, 6 research assistants, and 1 psychiatric nurse); seven of these raters (3 psychiatrists, 1 psychologist, and 3 research assistants) completed 259 (79.7%) of all ratings. The majority ($n = 199$, 61.2%) of the assessments were completed by raters with MD’s or PhD’s. At McLean, we carried out monthly reliability exercises where a study subject was interviewed in the presence of the research team. Each rater assessed the subject independently. Reliability was measured by the fraction of raters who showed agreement on a specific measure. Rates of agreement were perfect (1.0) for SCID diagnoses, near perfect for current mood episodes (1.0 for major depression, 0.93 for mania), and excellent for specific psychotic symptoms (0.80 for persecutory delusions, 0.85 for AH). The 201 SCID assessments in the Vanderbilt dataset were completed by a total of 11 trained research assistants, of which 2 completed 148 (73.6%) and 4 completed 172 (85.6%) of all ratings. For the Vanderbilt data, one experienced psychiatrist (S.H.) reviewed the SCID interviews, compared them with available medical records and made all final diagnoses.

3. Results

In the McLean data, we found one case (0.3%) of schizophrenia diagnosed with FRAH as the only criterion A symptom (Table 1). This patient scored 3 for both SCID items B17 and B18. This individual had no significant mood episodes. Thus, without special diagnostic weighting of FRAH, this individual would be diagnosed with psychotic disorder not otherwise specified (NOS) with isolated auditory hallucinations. We found six patients (1.8%) who received diagnoses of either schizophrenia ($n = 1$) or schizoaffective disorder ($n = 5$) due to BD as the sole

Table 1
Prevalence of schizophrenia cases diagnosed on the sole presence of first-rank auditory hallucinations (FRAH) or bizarre delusions (BD).

| Study | DSM version | Sample characteristics | Sample size (total) | Sample size (schizophrenia spectrum disorders) | Patients in whom FRAH was sufficient for diagnosis | Patients in whom BD was sufficient for diagnosis |
|--------------------------------|-------------|----------------------------|---------------------|--|--|--|
| Goldman et al. (1992) | DSM-III-R | Inpatients | 214 | 152 | N/A | 7 (4.6%) |
| Tanenberg-Karant et al. (1995) | DSM-III-R | First-admission inpatients | 196 | 96 | N/A | 7 (7.5%) |
| McLean data | DSM-IV-TR | Inpatients and outpatients | 569 | 325 | 1 (0.3%) | 6 (1.8%) |
| Vanderbilt data | DSM-IV-TR | Inpatients and outpatients | 260 | 201 | 1 (0.5%) | 0 (0.0%) |

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