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Significance of Endorsement of Psychotic Symptoms by US Latinos

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Abstract

In US regional studies, Latinos frequently endorse psychotic symptoms associated with impairment and mental health service use, yet do not meet criteria for psychotic disorder. Using a nationally representative Latino sample (N=2,554), we examined the prevalence of psychotic symptoms, their relationship to psychotic disorder, their correlates, and their relationship to mental health outcomes. Among US Latinos, 9.5% (SE=0.7) endorsed one or more lifetime psychotic symptoms, yet 93% did not meet SCID criteria for psychotic disorder. Endorsement was associated with physical and emotional distress, particularly lifetime anxiety and current substance use disorder. Acculturation to US society and reliance on spiritual/religious help were also associated with psychotic symptom endorsement. These symptoms have substantial clinical significance, being independently associated with suicidal ideation, mental health-related disability, and outpatient mental health service utilization. Endorsed psychotic symptoms in Latinos may constitute a clinically significant marker of general psychiatric vulnerability rather than a sign of psychotic disorder.

Keywords

psychosis; Latino; epidemiology; diagnosis; suicide

The cross-cultural study of psychotic symptoms and their relationship to schizophrenia and other psychotic disorders has posed important challenges to psychiatric research since the ground-breaking International Pilot Study of Schizophrenia (Kleinman, 1988). Recent epidemiological and clinical research has raised questions about the relationship between endorsement of psychotic symptoms and diagnosis of psychotic disorders among culturally diverse groups. Studies have found high rates of endorsement of psychotic experiences in diverse community samples, but much lower rates of actual psychotic disorder (Kendler et al., 1996; vanOs et al., 2000; Johns et al., 2004; Brugha et al., 2005).

Several studies have documented higher rates of endorsement of these “psychotic” experiences among Latinos than other US ethnic groups, particularly reports of seeing visions that others do not see and of hearing voices that others do not hear (Olfson et al., 2002; Kendler et al., 1996; Minsky et al., 2003; Posternak and Zimmerman, 2005). In a probability sample of 1,005 low-income primary care patients in New York City (73% Latino, largely of Caribbean origin), the prevalence of current, self-reported psychotic symptoms was 22.6% in Latinos, compared to 17% in African Americans and 13.5% in non-Latino whites (Olfson et al., 2002). Most of these symptom reports were of auditory and visual hallucinations (61% and 50%, respectively), but reports of persecutory delusions were also common (51%), as well as of more unusual symptoms such as thought insertion or broadcasting (31–32%), and delusions of reference or control (19–22%) (Olfson et al., 2002).

As in epidemiological studies with other ethnic/racial groups, however, the overwhelming majority of Latinos who endorse psychotic symptoms do not meet criteria for psychotic disorders when subjected to standardized diagnostic assessment (Olfson et al., 2002; Minsky

et al., 2003; Geltman and Chang, 2004). In the New York City sample cited above, only 7% of respondents who screened positive for psychotic symptoms met diagnostic criteria for psychotic disorder on the Composite International Diagnostic Interview for DSM-IV (Olfson et al., 2002). In an outpatient psychiatric clinic in Boston, only one in five Spanish-dominant Latino patients initially reporting hallucinations when referred from primary care met diagnostic evaluation criteria for psychotic disorder (Geltman and Chang, 2004).

Yet endorsement of psychotic symptoms—whether identified by self-report or through administration of screener instruments—is not without clinical value in Latino individuals. After adjusting for demographic and clinical characteristics, including other psychiatric disorders, Latino primary care patients who endorse psychotic symptoms are more likely than those who do not endorse them to have current suicidal ideation, recent work loss, marital distress, overall impairment, and a history of in-patient and out-patient psychiatric care (Olfson et al., 2002).

It is unclear why regional studies of Latinos show this elevated endorsement of putative psychotic experiences that are clinically meaningful despite the absence of psychotic disorder. Past research with Latinos provides support for three groups of factors: demographic, clinical, and socio-cultural/contextual. As in other populations (vanOs et al., 2000; Johns et al., 2004), socioeconomic disadvantage appears to elevate rates of psychotic symptom endorsement in Latinos, reflected in demographic characteristics such as lower income, disrupted marital status, and limited formal education (Olfson et al., 2002). Certain clinical factors may also be associated with endorsement in this population, including psychiatric disorder and traumatic exposure (Vega et al., 2006; Minsky et al., 2003; Mueser and Butler, 1987). Several studies have shown that socio-cultural and contextual variables influence symptom endorsement, with rates of psychotic symptom reports varying among Latinos in relation to language fluency, nativity, length of stay in the US, and religiosity (Vega et al., 2006; Olfson et al., 2002; Guarnaccia et al., 1992). In a large community study among Mexican-origin Latinos in California, nativity predicted the rate of psychotic symptom endorsement, with US-born Mexican Americans having twice the rate of endorsement compared to Mexico-born immigrants (Vega et al., 2006). Finally, expression of *ataque de nervios* (attack of nerves), a Latino idiom of distress with strong dissociative features, has also been implicated in the elevated endorsement of potentially psychotic experiences (Olfson et al., 2002; Minsky et al., 2003).

The published research on this topic is rather limited in scope. First, no study has simultaneously examined the effect of demographic, clinical, and socio-cultural/contextual factors on endorsement of psychotic symptoms in the national Latino population. Second, only a few studies in regional samples with limited Latino subgroup variation have attempted to validate symptom endorsement against diagnostic assessment of psychotic disorder. Third, no study has examined the effect of endorsement of psychotic symptoms on mental health outcomes in a national sample of Latinos, reducing the generalizability of reported findings.

The current study was designed in part to overcome these limitations. We examine these issues using data from the National Latino and Asian American Study, a large national household survey of US Latinos that collected detailed information on demographic, clinical, socio-cultural, and contextual variables. We restrict our analyses to the NLAAS, rather than using the recently available combined dataset of all the NIMH Collaborative Psychiatric Epidemiology Surveys (CPES), because the NLAAS contains a clinical reappraisal substudy as well as socio-cultural/contextual variables of particular importance to Latinos that are unavailable in the other studies that compose the CPES.

Specifically, we address the following questions:

- What is the lifetime prevalence of psychotic symptoms as assessed by a screener instrument among US Latinos?
- Are putative lifetime psychotic symptoms in Latinos associated with lifetime psychotic disorder as assessed by a structured interview?
- What demographic, clinical, and socio-cultural/contextual variables are associated with endorsement of lifetime and current psychotic symptoms by Latinos?
- What is the adjusted association between endorsement of psychotic symptoms and lifetime and current psychosocial disability, suicidal ideation, and mental health service utilization in Latinos?

METHODS

Sample

As described in detail elsewhere (Heeringa et al., 2004), the National Latino and Asian American Study (NLAAS) is a nationally representative survey of household residents (ages 18 and older) in the non-institutionalized population of the coterminous United States. Data were collected between May 2002 and November 2003. 2,554 English and Spanish-speaking Latinos, divided into four strata (495 Puerto Rican, 577 Cuban, 868 Mexican, and 614 “Other” Latino subjects), comprised the final Latino sample with a response rate of 75.5%. Weighting provides sample-based coverage of the national Latino population. The NLAAS weighted sample is similar to the 2000 Census in gender, age, education, marital status, and geographic distribution but different in nativity and household income, with more Latino immigrants and lower income respondents in the NLAAS sample. Possible reasons for this discrepancy are discussed elsewhere (Alegria et al., in press) and may represent more access in the NLAAS to the undocumented population compared to the Census.

Measures

NLAAS instrument development involved the cultural adaptation of existing measures, creation of new culturally relevant measures, and translation of the completed instrument into Spanish. The underlying conceptual framework, modified for psychiatric eco-epidemiology, assumed a strong role for contextual socio-cultural factors in the risk of psychopathology (Alegria et al., 2004).

We sought to answer our research questions through analyses that included demographic, clinical, and socio-cultural/contextual measures. Four of the clinical variables (see *mental health outcomes* below) were only used as dependent variables. *Endorsement of psychotic experiences* was used as the outcome variable in bivariate and regression analyses that identified correlates of endorsement and as an independent variable in regression analysis of correlates of mental health outcomes. All other variables were used as covariates.

Demographic measures included age, gender, education, household income, and marital status.

Clinical measures included lifetime and current (12-month) psychiatric disorders and presence of psychotic symptoms; lifetime and current chronic medical conditions; self-rated mental and physical health; exposure to traumatic events (from a 28-event survey); and lifetime and current measures of mental health service use (psychiatric hospitalization and outpatient mental health care), mental health-related disability, and suicidal ideation (*mental health outcomes*).

Prevalence of psychiatric disorders and psychotic symptoms was evaluated using the diagnostic interview of the World Mental Health Survey Initiative version of the *World Health Organization Composite International Diagnostic Interview* (WMH-CIDI) (Kessler and

Ustun, 2004). The WMH-CIDI is a fully structured diagnostic instrument administered by trained lay interviewers that is based on DSM-IV criteria. The validity of the earlier CIDI diagnostic assessments was consistent with those obtained independently by trained clinical interviewers (Rubio-Stipec et al., 1999). Diagnoses were determined for thirteen DSM-IV disorders, which were grouped into the following clusters for analysis: depressive (major depressive episode, dysthymia), anxiety (agoraphobia without panic disorder, panic disorder, generalized anxiety disorder, social phobia, and posttraumatic stress disorder), and substance use (alcohol and drug abuse and dependence).

A psychosis symptom screener included in the WMH-CIDI assessed for the presence of psychotic symptoms but did not yield psychotic disorder diagnoses. No diagnostic module for psychosis was used in the WMH-CIDI because of the limited retest consistency of earlier CIDI diagnostic field interviews with clinical follow-up diagnostic interviews for psychotic disorder (Kendler et al., 1996). Six psychotic experiences were investigated by the screener: visual hallucinations, auditory hallucinations, thought insertion/withdrawal, delusions of control, delusions of reference, and persecutory delusions (see Appendix for the exact questions). For the purposes of this study, respondents were classified as positive on the CIDI screener if they endorsed one or more psychotic symptoms within a specified time frame (lifetime or last 12 months [current]). Lifetime-level data allowed us to capture past phenomena that had since resolved, while current-level data focused on most recent phenomena.

Socio-cultural/contextual variables included self-reported Latino subgroup (Mexican, Cuban, Puerto Rican, or Other Latino descent), percent of lifetime in the US (0–30%, 30–69%, and >70%, with this last group also including US-born Latinos), language proficiency in English and Spanish, self-reported reliance for comfort on religious or spiritual practices, perceived social position, and endorsement of the *ataque de nervios* screener question (“Have you ever had an episode or nervous attack where you felt totally out of control?”). English and Spanish language proficiency were evaluated by asking respondents to rate their ability to speak, read, and write in English/Spanish on a 3-item scale (Cronbach’s $\alpha=.90$ for English and $.96$ for Spanish versions). See Table 1 for detailed categories of these variables.

Data Collection

275 trained, multilingual interviewers administered the NLAAS battery using laptop computers. All study materials were translated into Spanish using a standard translation and back-translation protocol. Half of the participants were monolingual Spanish speakers or had limited English proficiency and requested the interview in Spanish. Interviewers obtained written informed consent. The Institutional Review Board Committees of Cambridge Health Alliance, the University of Washington, and the University of Michigan approved all recruitment, consent, and interviewing procedures (see Pennell et al., 2004 for a detailed description).

Statistical methods

Comparisons on categorical variables between respondents who did and did not endorse lifetime psychotic symptoms on the CIDI psychosis screener were made with the Rao-Scott statistic (Rao, 1984). An adjusted Wald test was used for comparisons involving continuous variables. All analyses were conducted applying sampling weights (Heeringa et al., 2004) to generalize results to the U.S. Latino population.

The association between endorsement of lifetime and current psychosis symptoms on CIDI screener and the demographic, clinical, and socio-cultural/contextual predictor variables were evaluated with logistic regressions separately for each time frame. Three blocks of adjustor categories were entered sequentially in the following order: demographic, clinical, and socio-

cultural/contextual variables. Logistic regressions controlling for these same variables as covariates were used to model the association between psychotic symptom endorsement status and the four measures of mental health outcome separately for each time frame.

We used STATA version 8.2 Survey Analysis procedures to account for the complex sample design. STATA uses a first-order Taylor series expansion to produce the variance estimator (Stata Corp, 2004). Level of significance was 0.05 throughout.

Clinical reappraisal substudy

Data collection for the Clinical Reappraisal Psychosis Interview was completed between July of 2003 and April of 2004. Eligibility criteria were: 1) completion of original NLAAS interview; 2) endorsement of at least one of the six lifetime experiences investigated by the psychosis symptom screener; and 3) response to an open-ended question describing an example of these experiences. The pool of eligible candidates with lifetime psychotic symptoms was narrowed from 279 to 234 because the reappraisal process started after the onset of data collection. Of the 234 eligible respondents, telephone information was only available for 189, of whom 36% (n=68) were assessed for the clinical reappraisal substudy. The reasons for non-participation were inability to re-contact (54%) or participant refusal (10%). Participants did not differ from non-participants on any demographic, clinical, or socio-cultural/contextual measure, except for citizenship status and Spanish language proficiency. Participants were significantly more likely to be US citizens ($p=.015$) and have lower Spanish proficiency ($p=.01$).

Clinical reappraisal participants were interviewed using the *World Mental Health Structured Clinical Interview for DSM-IV (WMH SCID 2000) Psychosis Interview*. This semi-structured clinical interview assesses for psychosis in the context of specific DSM-IV Axis I disorders, including major depression and bipolar disorder, as well as eight primary psychotic-spectrum disorders such as schizophrenia (First et al., 1998). The SCID Psychosis Interview was translated into Spanish by a team of bilingual investigators using a standard translation and back-translation protocol (Alegría et al., 2004). This interview was administered over the telephone in the respondent's language of interview by one of two clinicians who were selected for their clinical expertise, familiarity with the study instrument and population, and Spanish or English language fluency. Positive answers to SCID queries were probed by the clinicians to distinguish culturally normative non-psychotic experiences from true psychotic symptoms. Both SCID clinicians were blind to respondents' diagnostic status. Clinicians attended a four-day training conducted by coordinators of comparable clinical reappraisal studies (Kessler et al., 2004). For quality assurance purposes, a 50% random sample of the completed interviews (n=34) was reassessed by one of three board-certified psychiatrists (RLF, MHL, CB). Verbal consent and permission to tape-record were obtained before the start of each interview, with written consent obtained subsequently by mail. SCID interviews averaged 43 minutes in length. The Institutional Review Board Committee of Cambridge Health Alliance approved all recruitment, consent, and interviewing procedures for this substudy.

RESULTS

CIDI Psychosis Screener

One or more lifetime psychotic experiences was endorsed by 279 NLAAS Latino respondents, a 9.5% weighted prevalence ($SE=0.73$). Henceforth we refer to these 279 subjects as the "Lifetime CIDI-psychosis-symptom-positive" group (Lifetime CIDI-positive for short), while the remaining 2,275 subjects are referred to as the "Lifetime CIDI-psychosis-symptom-negative" group (or as Lifetime CIDI-negative). The most frequently endorsed experiences were visual and auditory hallucinations (65% and 50%, respectively), followed by delusions

of reference and persecutory delusions (10% each). Thought insertion/withdrawal and delusions of control were infrequently endorsed –by 6% and 3% of the sample, respectively. The proportion of participants with hallucinations (either auditory or visual) was 91%. Approximately two-thirds of lifetime CIDI-positive cases endorsed only one symptom (n=182), 26.5% endorsed two (n=74), 6.8% endorsed 3–4 symptoms (n=19), and only 1.4% (n=4) endorsed 5–6 psychotic symptoms. The mean number of symptoms endorsed was 1.5 (SE=.05).

Clinical Reappraisal

Only 5 (7%) of the lifetime CIDI-positive respondents in the reappraisal study (N=68) met SCID psychosis criteria for a lifetime psychotic disorder, yielding a 93% false positive rate for the psychosis symptom screener of the WMH-CIDI. Three cases were diagnosed with major depression with psychotic features, one case with bipolar I disorder with psychotic features, and one case with delusional disorder. No diagnosis was found in 23 cases, and the remaining subjects received diagnoses of depressive (n=21), substance use (n=7), adjustment, (n=4) and anxiety (n=3) disorders. In addition, four cases had comorbid depressive and substance use disorders and one case had comorbid depressive and anxiety disorders

Correlates of Endorsing Psychotic Symptoms

Table 1 presents a cross tabulation of various demographic, clinical, and socio-cultural/contextual variables and lifetime reports of psychotic symptoms on the CIDI. Lifetime CIDI-positive respondents were less likely to be married and more likely to meet lifetime criteria for any depressive, anxiety, and substance use disorder. These subjects were also more likely to have one or more current and lifetime psychiatric disorder and chronic medical condition, to have ever experienced trauma, and to rate their mental or physical health as fair or poor. In terms of socio-cultural/contextual variables, lifetime CIDI-positive respondents were less likely to be Mexican and more likely to have greater acculturation to US society as evidenced by greater proportion of lifespan lived in the US and better English proficiency. Further, they were more likely to seek comfort through religious or spiritual means for emotional problems than the CIDI-negative group, and to endorse the screener question for *ataque de nervios*.

Table 2 presents results of logistic regression analyses on three models of correlates of lifetime endorsement of psychotic experiences. Model 1 included only demographic variables, and revealed a statistically significant association between unmarried status and endorsement. This association persisted in model 2, which also included the clinical factors, and a new significant association was found for presence of any lifetime anxiety disorder. Once socio-cultural/contextual factors were added in Model 3, however, unmarried status ceased to be significant. Instead, endorsement of lifetime psychosis symptoms was found to be negatively associated with female gender and being Mexican and positively associated with having an anxiety disorder and seeking comfort through religious or spiritual means.

Logistic regression analyses were also conducted with the respondents endorsing current psychotic symptoms (results available upon request) (N of positive cases=107). Model 3 found the following positive correlates of endorsement: any substance use disorder (OR=4.08 [95% CI: 1.02 – 16.4]), fair/poor mental health (OR=2.2 [1.26 – 3.86]), fair/poor general health (OR=2.5 [1.29 – 4.83]), trauma exposure (OR=1.15 [1.03 – 1.28]), higher English proficiency (2.86 [1.30 – 6.29]), and seeking comfort for emotional problems through religious or spiritual means (OR=2.33 [1.50 – 3.64]). A negative association was also found with married status (OR=.53 [.31 – .91]).

CIDI-Positive Status and Mental Health Outcomes

After adjusting for the same covariates as in Model 3 above, lifetime CIDI-positive status was associated with three lifetime mental health outcomes: outpatient mental health service utilization, mental health-related disability, and suicidal ideation (see Table 3). Other variables associated with these three outcomes included lifetime number of chronic medical conditions and lifetime endorsement of *ataque de nervios*. Lifetime depressive disorder was associated with disability, suicidality, and psychiatric hospitalization, but not outpatient service utilization. Other variables were significant for only 1–2 of the four outcome measures evaluated.

Similar analyses conducted with 12-month data (not shown) revealed that current CIDI-positive status was significantly associated only with current suicidal ideation (OR=2.04 [95% CI: 1.12 – 3.74]). Current depressive disorder and fair/poor mental health were the most robust correlates of current mental health outcomes, being associated with psychiatric hospitalization, outpatient mental health service utilization, and mental health-related disability. Female gender was associated with lower rates of psychiatric hospitalization but higher rates of suicidal ideation and outpatient utilization. Other variables were each significantly associated with only 1–2 mental health outcomes.

DISCUSSION

This is the first national study of psychotic symptom reports in Latinos. Our study assessed the epidemiological and clinical significance of psychotic symptom endorsement in this important and rapidly growing US ethnic group. Approximately one in ten Latinos in a US national probability sample endorsed at least one lifetime psychotic symptom on the CIDI screener. Diagnostic evaluation, however, revealed that only 7% of Latinos in the NLAAS who endorsed psychotic symptoms met SCID criteria for psychotic disorder. Nevertheless, endorsement was independently associated with worse mental health status, after adjusting for demographic, clinical, and socio-cultural/contextual covariates. Specifically, psychotic symptom endorsement was associated with suicidal ideation, disability, and mental health care utilization, suggesting the role of these symptoms as markers of clinical severity in this population.

Demographic correlates of psychotic symptom endorsement

Strikingly, few demographic indicators were associated with higher endorsement of psychotic symptoms in Latinos. Endorsement was associated with unmarried status in bivariate analyses and in the regression model for current symptoms. In the lifetime-symptom regression model, however, this association was better accounted for by a negative association with female gender. No relationship was found with younger age, lower income, or lower education, which were associated with psychotic symptoms in several population samples (Johns et al., 2004; vanOs et al., 2000). These findings suggest that psychotic symptom endorsement in Latinos is associated with a specific marker of interpersonal vulnerability, unmarried status (particularly among men), rather than to global markers of social disadvantage.

Clinical correlates

Several clinical factors are especially salient to understanding psychotic symptom endorsement. The association of psychotic symptoms with a wide range of psychiatric disorders suggests that these symptoms represent nonspecific markers of psychiatric distress rather than a specific diagnostic profile. However, patients with lifetime anxiety disorders and current substance use disorders may be particularly at risk of reporting psychotic symptoms. The constellation of self-assessed poor health and higher number of both chronic medical conditions and psychiatric disorders suggests that those who endorsed psychotic symptoms

constituted a group of people who were substantially physically and emotionally impaired. However, endorsement of psychotic symptoms was not associated with specific physical problems (data not shown).

Another clinical factor associated with psychotic symptom endorsement by Latinos was traumatic exposure, especially in terms of current symptoms. An association between trauma and psychotic symptoms has been described in other populations, particularly with respect to hallucinations and persecutory delusions (Johns et al., 2004; Garety et al., 2001; Hamner et al., 1999). Interestingly, Latinos appear more likely to endorse psychotic symptoms in the context of PTSD than non-Latino whites (Mueser and Butler, 1987; David et al., 1999). This may be related to a nonspecific association between psychotic reports and a wide range of psychiatric disorders. Alternatively, Latinos could be endorsing dissociative symptoms of PTSD on scales intended to capture psychotic symptoms. Some authors have suggested that the higher reported comorbidity between psychotic symptoms and PTSD in Latinos arises from greater comorbidity between PTSD and major depression (David et al., 1999) with the psychotic reports arising from the affective component of the comorbidity, possibly due to a higher chronicity or severity of depressive disorder in this population (Hamner et al., 1999; Posternak and Zimmerman, 2005). This explanation is partly supported by the positive association between psychotic symptom self-reports and a diagnosis of depression found among Latino patients in a large outpatient behavioral health clinic (Minsky et al., 2003). In our sample, however, psychotic symptom reports were associated with lifetime anxiety disorders rather than with depressive disorders in multivariate analyses. This may indicate a connection between psychotic symptom endorsement and anxiety symptoms, including the non-affective components of PTSD, rather than specifically with depression.

Socio-cultural/contextual correlates

Several socio-cultural/contextual variables were also found to be associated with psychotic symptom endorsement in bivariate analyses. The association with greater acculturation to US society, as measured by greater proportion of lifespan lived in the US and better English proficiency, is consistent with research on Mexican Americans in California (Vega et al., 2006). In that study, US birth predicted significantly higher psychotic symptom endorsement. While it is not clear what mechanisms underlie these findings, one hypothesis is that US birth is associated with worse physical and mental health among Latinos (Escobar and Vega, 2000). Psychotic symptom endorsement may thus be a positive marker of distress resulting from frustrated socioeconomic aspirations and the perception of ethnic discrimination. A similar explanation has been invoked to interpret the association found in the UK between Afro-Caribbean ethnicity and an elevated rate of schizophrenia and other psychotic disorders (Harrison et al., 1988; McGovern and Cope, 1987). This prevalence elevation in Afro-Caribbean individuals relative to the British-born white sample actually increases rather than decreases among the British-born children of the migrants compared to the migrants themselves, suggesting a socio-contextual explanation (Harrison et al., 1997). Given the lack of association between psychotic symptom endorsement and a psychotic disorder diagnosis in our study, we are not postulating a higher rate of psychotic disorder among US Latinos like that observed in the UK data. However, the US-UK comparison between first and second generation minority groups deserves further study, especially given the association in both countries between Caribbean descent, greater acculturation, and psychotic symptom endorsement.

Another important socio-cultural/contextual factor was seeking comfort for emotional problems by religious or spiritual means, which was associated with both lifetime and current risk of symptom endorsement in multivariate analyses. This finding is consistent with research in Puerto Rico that found falsely elevated rates of schizophrenia in an epidemiological study

partly as a result of interviewer miscoding of normative religious experiences as psychotic symptoms (Guarnaccia et al., 1992). It is possible that Latinos who have greater participation in religious activities interpreted certain perceptual or interpersonal experiences in spiritual or supernatural terms that were misidentified as psychotic symptoms. Given the cross-sectional nature of our data, it is also possible that Latinos with psychotic-like symptoms sought support from religious settings to reduce the distress produced by unusual experiences. Our lifetime data suggest that the association with endorsement was strongest for Caribbean-origin men, possibly because of greater normativity of religious experiences among Mexican women, which were therefore not reported in mental health surveys. In either case, the association of religiosity with psychotic reports is valuable to clinicians in terms of identifying potential sources of support for patients suffering from a combination of psychiatric disorder and putative psychotic symptoms.

Psychotic symptom endorsement was also associated in bivariate analyses with *ataque de nervios*. *Ataque* is a culturally defined Latino syndrome characterized by fits of acute emotionality and loss of control in response to life stressors which lacks a one-to-one relationship with particular psychiatric disorders (Guarnaccia et al., 1993; Lewis-Fernández et al., 2005). The association in this study between psychotic symptom endorsement and *ataque* supports previous evidence of a significant correlation between *ataque* and certain cultural idioms of distress, such as hearing noises or voices when alone and seeing shadow-like figures known as *celajes*, that share phenomenological features with psychotic symptoms (Lewis-Fernández et al., 2005). One possibility is that Latinos in the NLAAS over-endorsed CIDI psychosis screener items because these were tapping culturally patterned expressions of distress. Since greater number of *ataques* and higher score on a measure of these idioms of distress are associated with elevated scores on the Dissociative Experiences Scale among Latinos (Lewis-Fernández et al., 2002; Lewis-Fernández et al., 2005), dissociative processes may provide an alternative mechanism for the experiences reported in the CIDI screener (Moskowitz et al., 2005). The relationship between trauma, dissociation, higher impairment, and greater health services utilization (Briere et al., 2005; Elhai et al., 2005) may provide some explanation for the independent association found between endorsement and service outcome measures.

Clinical significance

Taken together, our findings argue for the importance of thorough clinical assessment of Latino patients who describe symptoms that initially suggest the presence of psychosis. In fact, the label of psychotic symptoms to denote these experiences is probably inaccurate (Geltman and Chang, 2004), given the very high rate of false positive reports (93%). Clinicians are advised to avoid several pitfalls (López, 1989). First, incorrectly diagnosing a psychotic disorder where none exists, resulting in the use of overly restrictive and stigmatizing levels of care, such as psychiatric hospitalization, or in the inappropriate and potentially risky use of antipsychotic medication. Alternative diagnoses must be carefully considered, in particular those related to traumatic exposure, dissociation, and anxiety. Second, clinicians should be aware that absence of a psychotic diagnosis does not indicate absence of psychopathology or impairment, and that these symptoms are a marker of distress. Third, clinicians may under-diagnose psychotic disorders by attributing all such presentations in Latinos to ethno-cultural factors. These scenarios have the potential to result in poor outcomes for patients, families, and society at large. It is thus critical that primary care providers and psychiatrists pursue clinical clarification of psychotic symptom reports.

Buttressing previous research (Olfson et al., 2002), our findings indicate that endorsement of psychotic symptoms by Latinos carries substantial clinical value, whether or not these experiences prove to be indicative of psychotic disorder. Our data showed that even after

adjusting for a comprehensive list of covariates, symptom endorsement by Latinos was independently associated with several measures of poor mental health status. Most notably, endorsement was related to suicidal ideation in both lifetime and current analyses. This confirms previous research linking psychotic symptom reports and suicidality in Latino primary care patients (Olfson et al., 2002). Clinicians are advised to assess for suicide risk in all their Latino patients presenting with potentially psychotic symptoms. The reasons for an association between psychotic reports and suicidality are unclear, but may be related to the role of psychotic symptom endorsement as a marker of emotional dysregulation and impairment in this population.

Limitations

The absence of schizophrenia and other non-affective psychosis in the core CIDI assessments limited our ability to assess the relationship between psychotic symptoms and disorders in the full Latino sample. Previous validation studies with the CIDI have shown that lay-administered diagnostic instruments substantially overestimate the prevalence of psychotic disorders (Kendler et al., 1996). In addition, the cross-sectional design prevented us from assessing the relationship between psychotic symptom endorsement at time of interview and future development of a psychotic disorder. We also did not explore the temporal sequencing of psychotic symptom endorsement in relation to the onset of comorbid psychiatric diagnoses. Another limitation of our study was the small sample size available to evaluate the association between endorsement of psychotic symptoms, as an expression of current vulnerability, and current negative mental health outcomes. Although the relationships found for the 12-month time frame were consistent with the lifetime data, the confidence intervals were large. Future studies with larger population samples and longitudinal designs may help us distinguish between the short- and long-term mental health outcomes linked to psychotic symptom endorsement.

The low response rate in the clinical reappraisal study (36%), particularly among Spanish-speaking Latinos who are not US citizens, limited our analysis of the diagnostic validity of these symptoms. If response was associated to the absence of a psychosis diagnosis, we may have overestimated the false positive rate of those endorsing psychotic symptoms. However, the high rates of non-response were among immigrant Latinos, who were less likely to report psychotic symptoms (Vega et al., 2006).

CONCLUSION

US Latinos frequently reported symptoms that may be misconstrued as evidence of psychosis. After adjusting for the effect of mood, anxiety and substance use disorders as well as other covariates, these “psychotic” symptoms were independently associated with poorer mental health outcomes, particularly suicidal ideation, mental health-related disability, and outpatient mental health service utilization. Rather than signs of psychotic disorder, much of what appears initially as psychosis in Latinos may instead constitute nonspecific markers of social, physical, and psychiatric vulnerability. Our findings emphasize the value of including a thorough review of these symptoms in complete clinical assessments with this population. We also highlight the need to conduct further research on the independent effect of psychotic symptom reports, apart from their relationship to psychotic disorder (vanOs et al., 2001). This line of research may help clinicians identify readily apparent markers of psychiatric vulnerability in Latino patients and guide their choice of evidence-based treatments.

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