



AMERICAN
PSYCHOLOGICAL
ASSOCIATION

Volume 128
Number 3

April 2019

Published eight times

ISSN 0021-843X

Journal of Abnormal Psychology

Founded by Morton Prince, 1906

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In a sample of 202 post 9/11 U.S. military veterans, this study tested 2 theoretical models of the associations between relationship impairment and posttraumatic stress disorder (PTSD) symptoms measured over the course of 1 year, and explored potential gender differences. Increased PTSD symptoms over time were associated with increased relationship impairment, yet relationship impairment did not predict changes in PTSD symptoms. Noncombat life stress was associated with changes in PTSD for women veterans, but not men.

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Age, Period, and Cohort Trends in Mood Disorder Indicators and Suicide-Related Outcomes in a Nationally Representative Dataset, 2005–2017

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Drawing from the National Survey on Drug Use and Health (NSDUH; $N = 611,880$), a nationally representative survey of U.S. adolescents and adults, we assess age, period, and cohort trends in mood disorders and suicide-related outcomes since the mid-2000s. Rates of major depressive episode in the last year increased 52% 2005–2017 (from 8.7% to 13.2%) among adolescents aged 12 to 17 and 63% 2009–2017 (from 8.1% to 13.2%) among young adults 18–25. Serious psychological distress in the last month and suicide-related outcomes (suicidal ideation, plans, attempts, and deaths by suicide) in the last year also increased among young adults 18–25 from 2008–2017 (with a 71% increase in serious psychological distress), with less consistent and weaker increases among adults ages 26 and over. Hierarchical linear modeling analyses separating the effects of age, period, and birth cohort suggest the trends among adults are primarily due to cohort, with a steady rise in mood disorder and suicide-related outcomes between cohorts born from the early 1980s (Millennials) to the late 1990s (iGen). Cultural trends contributing to an increase in mood disorders and suicidal thoughts and behaviors since the mid-2000s, including the rise of electronic communication and digital media and declines in sleep duration, may have had a larger impact on younger people, creating a cohort effect.

General Scientific Summary

More U.S. adolescents and young adults in the late 2010s (vs. the mid-2000s) experienced serious psychological distress, major depression, and suicidal thoughts, and more attempted suicide and took their own lives. These trends are weak or nonexistent among adults 26 years old and over, suggesting a generational shift in mood disorders and suicide-related outcomes rather than an overall increase across all ages.

Keywords: mood disorders, depression, suicide, birth cohort

Supplemental materials: <http://dx.doi.org/10.1037/abn0000410.supp>

The public health burden of mood disorders is substantial, with negative effects including functional impairment, reduced quality of life, disability, low work productivity, premature mortality, and increased health care utilization (Cassano & Fava, 2002; Mrazek, Hornberger, Altar, & Degtiar, 2014; Simon, 2003). The economic

costs of depression are estimated to be in the range of \$106–118 billion per year in the United States (Mrazek et al., 2014). In addition to being costly in many domains, depression is widespread; an estimated one in six individuals will experience major depressive disorder at some point in their lives (Davidson &

This article was published Online First March 14, 2019.

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The analyses and results of the current project have not been previously presented, although descriptive statistics by broad age groups are publicly available in the yearly National Survey on Drug Use and Health (NSDUH) detailed tables posted online. Institutional review board approval for the NSDUH was obtained by the survey administrator, RTI International, on

behalf of the U.S. Department of Health and Human Services; the study does not include data collected by any of the authors. During the completion of this project, Mary E. Duffy was supported by the National Science Foundation Graduate Research Fellowship Program under Grant NSF 1449440. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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Validating Psychosocial Pathways of Risk Between Neuroticism and Late Life Depression Using a Polygenic Score Approach

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Neuroticism is a stable and heritable personality trait that is strongly linked to depression. Yet, little is known about its association with late life depression, as well as *how* neuroticism eventuates into depression. This study used data from the Wisconsin Longitudinal Study (WLS; $N = 4,877$) to examine the direct and indirect effects of neuroticism on late life depression at 3 points in the life course—ages 53, 64, and 71—via stressful life events (i.e., independent and dependent) and social supports measured across adulthood and into later life. Neuroticism was assayed using multiple methods, including self-report measures (phenotypic model) and a polygenic score (polygenic model) informed by a meta-analytic genome-wide association study. Results indicated that the phenotypic model of neuroticism and late life depression was partially mediated via dependent stressful life events experienced after the age of 53 and by age 64 social support. This association was replicated in the polygenic model of neuroticism, providing key evidence that the findings are robust. No indirect effects emerged with respect to age 53 social support, age 71 social support, adult dependent stressful life events (experienced between age 19 and 52), and adult and late life independent stressful life events in either the phenotypic or polygenic models as they pertained to late life depression. Results are consistent with previous findings that individuals with high neuroticism may be vulnerable to late life depression through psychosocial risk factors that are, in part, attributable to their own personality.

General Scientific Summary

Neuroticism is strongly linked to depression, but little is known how this association unfolds over time, especially in older adults. This study suggests that neuroticism (measured using both a traditional self-report and an unbiased polygenic score) is indirectly associated with late life depression through the effects of late life dependent stressful life events and social support.

Keywords: neuroticism, depression, polygenic score, social support, stressful life events

Neuroticism is a personality trait characterized by irritability, anger, sadness, anxiety, worry, hostility, self-consciousness, and vulnerability in response to threat, frustration, or loss (Costa & McCrae, 1992; Lahey, 2009). Neuroticism is notably associated with a wide gamut of negative physical (Goodwin, Cox, & Clara,

2006) and mental health outcomes (Lahey, 2009; Malouff, Thorsteinsson, & Schutte, 2005). Among mental health outcomes, the link between neuroticism and adult depression has been among the most well-studied in the literature (Fanous, Gardner, Prescott, Cancro, & Kendler, 2002; Kendler, Gatz, Gardner, & Pedersen,

This article was published Online First March 4, 2019.

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This research uses data from the Wisconsin Longitudinal Study (WLS) of the University of Wisconsin-Madison. Since 1991, the WLS has been supported principally by the National Institute on Aging (AG-9775, AG-21079, AG-033285, and AG-041868), with additional support from the Vilas Estate Trust, the National Science Foundation, the Spencer Foundation, and the Office of the Vice Chancellor for Research and Graduate Education of the University of Wisconsin-Madison. Since 1992, data have been collected by the University of Wisconsin Survey Center. A public use

file of data from the Wisconsin Longitudinal Study is available from the Wisconsin Longitudinal Study, University of Wisconsin-Madison, 1180 Observatory Drive, Madison, Wisconsin 53706 and at <http://www.ssc.wisc.edu/wlsresearch/data/>. The opinions expressed herein are those of the authors.

This study complies with APA ethical standards in the treatment of participants. The study was approved by the University of Wisconsin-Madison Institutional Review Board (IRB) (Study Name: *Nonnormative Parenting in Old Age: Pathways to Resiliency and Vulnerability*, IRB 2017-0618).

James J. Li was supported in part by a core grant to the Waisman Center from the National Institute of Child Health and Human Development (P30-HD03352) and by the Wisconsin Alumni Research Foundation (WARF). All authors declare that they have no conflicts of interest.

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Association Between Negative Cognitive Bias and Depression: A Symptom-Level Approach

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Cognitive models of depression posit that negatively biased self-referent processing and attention have important roles in the disorder. However, depression is a heterogeneous collection of symptoms and all symptoms are unlikely to be associated with these negative cognitive biases. The current study involved 218 community adults whose depression ranged from no symptoms to clinical levels of depression. Random forest machine learning was used to identify the most important depression symptom predictors of each negative cognitive bias. Depression symptoms were measured with the Beck Depression Inventory—II. Model performance was evaluated using predictive R-squared (R^2_{pred}), the expected variance explained in data not used to train the algorithm, estimated by 10 repetitions of 10-fold cross-validation. Using the self-referent encoding task (SRET), depression symptoms explained 34% to 45% of the variance in negative self-referent processing. The symptoms of sadness, self-dislike, pessimism, feelings of punishment, and indecision were most important. Notably, many depression symptoms made virtually no contribution to this prediction. In contrast, for attention bias for sad stimuli, measured with the dot-probe task using behavioral reaction time (RT) and eye gaze metrics, no reliable symptom predictors were identified. Findings indicate that a symptom-level approach may provide new insights into which symptoms, if any, are associated with negative cognitive biases in depression.

General Scientific Summary

This study finds that many symptoms of depression are not strongly associated with thinking negatively about oneself or attending to negative information. This implies that negative cognitive biases may not be strongly associated with depression per se, but may instead contribute to the maintenance of specific depression symptoms, such as sadness, self-dislike, pessimism, feelings of punishment, and indecision.

Keywords: cognitive model of depression, symptom importance, machine learning

Supplemental materials: <http://dx.doi.org/10.1037/abn0000405.supp>

This article was published Online First January 17, 2019.

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Justin Dainer-Best is now at Department of Psychology, Bard College.

Funding for this study was provided by National Institute of Health (awards R56MH108650, R21MH110758, R33MH109600). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. The Texas Advanced Computing Center (TACC) at The University of Texas at Austin provided access to the Wrangler computing cluster to facilitate high-performance

computing for this project (<https://www.tacc.utexas.edu/>). We are very grateful for the help with data collection from numerous volunteer research assistants. All authors contributed to the research design. Christopher G. Beevers and Jason Shumake take responsibility for data analysis and interpretation. Christopher G. Beevers, Rochelle A. Stewart, and Jocelyn Labrada take responsibility for data integrity. Rochelle A. Stewart and Jocelyn Labrada held responsibility for data collection under the supervision of Christopher G. Beevers. Christopher G. Beevers drafted the article, and Jason Shumake, Justin Dainer-Best, Michael C. Mullarkey, and John E. McGeary provided critical revisions. All authors approved the final version of the article for submission. None of the authors declare any conflicts of interest.

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BRIEF REPORT

Social Anxiety Disorder and Memory for Positive Feedback

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Clinical theorists postulate that individuals with social anxiety disorder (SAD) display memory biases such that recall of social events becomes more negative with time; however, alternative memory models have also been proposed. Research has focused predominantly on selective recall of negative information with inconsistent findings. The goal of the current study was to examine potential biases in recall of positive social feedback. Individuals with SAD ($n = 59$) and nonanxious community controls ($n = 63$) engaged in an unexpected public speaking task and received standardized positive or neutral feedback on their speech. Participants were asked to recall the feedback after 5 minutes and after 1 week. Results indicated that at delayed recall, individuals with SAD recalled positive feedback as less positive than it had been. The findings support cognitive models of SAD and extend the model to positive social information. Research is needed to understand the mechanisms that underlie fading positivity.

General Scientific Summary

Individuals with social anxiety disorder display a pattern of eroding positivity in their recall of positive social feedback.

Keywords: memory bias, public speaking, social anxiety disorder

Supplemental materials: <http://dx.doi.org/10.1037/abn0000407.supp>

Clinical theorists propose that individuals with social anxiety disorder (SAD) focus on negative information during social events and repeatedly retrieve and ponder this information after the event. This selective retrieval process is hypothesized to progressively alter memories such that recollections of events become more negative over time (Clark & Wells, 1995; Rapee & Heimberg, 1997). An alternative model is suggested by memory studies that find individuals without SAD often display a *positivity bias*, recalling events as more positive than they were (e.g., Levine, Schmidt, Kang, & Tinti, 2012; Schacter, Guerin, & St. Jacques, 2011; Wilson & Ross, 2003). This bias is hypothesized to arise from an adaptive self-protective drive to maintain self-esteem

(Wilson & Ross, 2003). People prone to negative affect, such as those with social anxiety, are postulated to lack this self-protective tendency (e.g., Koban et al., 2017). The difference between these two models has implications for SAD interventions, namely whether to modify postevent retrieval, thereby offsetting negative biases, or to address ways to capitalize on positive outcomes to build social self-esteem.

The method used to evaluate the two models is the same, namely assessing change in memory between immediate and delayed recall. Further, both models assume that selective recall is more likely to occur if the stimuli involve threat and self-referent (vs. other-referent) encoding (Brendle & Wenzel, 2004; Mansell & Clark, 1999). In the domain of social anxiety, two types of studies have been conducted to examine memory bias. The first assesses change in participants' self-judgments of social performance over time. This approach has produced inconsistent results, with some studies finding evidence for negative change in self-rated performance (Cody & Teachman, 2011; Dannahy & Stopa, 2007) and others not (Abbott & Rapee, 2004; Brozovich & Heimberg, 2011).

The second approach is to provide specific feedback following a social task and assess change in feedback memory between immediate and delayed recall. One advantage of this approach is that the feedback is, to a certain extent, objective and standardized. It also allows comparison of memory change for positive as well as negative feedback, thereby building on the mounting evidence that individuals with SAD respond to positive events in non-

This article was published Online First January 31, 2019.

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This research was supported by the Social Sciences and Humanities Research Council of Canada (SSHRC) Grant 435-2012-0350. The funding source was not involved in the conduct of the research or preparation of the article. The study was approved by the UBC Behavioural Research Ethics board under the title "Self and Social Perception – Part 2" (H15-00243). The authors declare no conflict of interest.

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Social Avoidance in Depression: A Study Using a Social Decision-Making Task

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Depression significantly affects interpersonal functioning. Social avoidance may play an important role in depression, limiting opportunities and social skills acquisition, contributing to the maintenance of social difficulties. In the last few years, the need for studying social interactions using interactive tasks has been highlighted. This study investigated social avoidance in unmedicated depressed ($n = 26$) and matched healthy control ($n = 26$) participants, using a novel computerized social decision-making task (the TEAM task). In this task, participants choose between a social option (playing in a team with a coplayer) and an individual option (playing alone). Although the social option is more profitable from a material point of view, it can also be challenging because of social comparison and guilt feelings for failing the team. It was found that the higher the rank of the coplayer, the stronger the negative emotions (shame, guilt) reported by participants and the more they opted for the individual option. Depressed participants reported significantly less positive (happiness) and more negative (shame, guilt, disappointment) feelings regarding the task. Importantly, depressed participants chose the individual option significantly more often than controls, which led to lower gains in this group. Furthermore, as the task progressed, controls selected the individual option less often, whereas depressed participants selected the individual option more often. Our findings illustrate the importance of social avoidance in depression and how this behavior can lead to negative consequences. They also highlight the role of social comparison and guilt-related processes in underlying social avoidance in depression.

General Scientific Summary

In this study, we used a novel computerized social decision-making task to investigate social avoidance in depression. Our findings suggest that social avoidance plays a key role in depression, limiting individuals from opportunities and contributing to poor life quality. Furthermore, this study supports the notion that social comparison and guilt-related processes may underlie social avoidance in depression.

Keywords: depression, social comparison, social avoidance, social decision making

Supplemental materials: <http://dx.doi.org/10.1037/abn0000415.supp>

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The study was approved by the Research Ethics Committee of the School of Psychology, Universidad de la República (Comité de Ética en Investigación de la Facultad de Psicología, Universidad de la República; protocol: 191175-001397-14). Special thanks to all of the volunteers who

participated in the research and to the Center for Basic Research in Psychology. This study was funded by Comisión Sectorial de Investigación Científica, Universidad de la República (Uruguay), and a Master Scholarship from the Comisión Académica de Posgrados, Universidad de la República to Gabriela Fernández-Theoduloz. Álvaro Cabana and Victoria B. Gradin were funded by Universidad de la República, Agencia Nacional de Investigación e Innovación, and the Programa de Desarrollo de las Ciencias Básicas (PEDECIBA). The funding sources had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; and preparation, review, or approval of the manuscript.

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Longitudinal Associations in the Direction and Prediction of PTSD Symptoms and Romantic Relationship Impairment Over One Year in Post 9/11 Veterans: A Comparison of Theories and Exploration of Potential Gender Differences

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Posttraumatic stress disorder (PTSD) is prevalent among combat veterans and is associated with intimate relationship difficulties. Few studies have examined the prospective longitudinal course of associations between PTSD and relationship difficulties and whether there are gender differences. In a sample comprised of 202 male and female post 9/11 veterans, this study examined gender differences in the association between PTSD symptoms measured 4 times over the course of 1 year and romantic relationship role impairment measured at the beginning and end of that year, accounting for the association of combat stress and noncombat stressful life events. Increases in PTSD symptoms over time were positively associated with increased relationship impairment; however, relationship impairment was not associated with changes in PTSD over time. Gender did not significantly moderate this relationship. However, allowing model parameters to vary between genders revealed that noncombat life stress was associated with changes in PTSD over time for women, but not men. Conversely, only men exhibited associations of baseline levels of combat stress and noncombat stress with baseline relationship functioning, and between baseline relationship functioning and baseline PTSD symptoms. Findings suggest women veterans in particular may benefit from clinical attention to the influence of general stress on PTSD symptoms, while clinical work to improve couple impairment in the context of PTSD symptoms may be beneficial for veterans of both genders.

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The contents of this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs or the United States Government. This work was supported by VA Merit Awards to Sandra B. Morissette (I01RX000304-01) and to Sandra B. Morissette and Eric C. Meyer (I01RX000304-04) from the Rehabilitation Research and Development Service of the Department of Veterans Affairs (VA) Office of Research and Development (ORD). We thank Suzy Bird Gulliver for her contributions to conceptualization of the parent study.

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BRIEF REPORT

Gender and Obstetric Factors in the Determination of the Age of Onset of Schizophrenia in a Nigerian Cohort

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The importance of gender and obstetric factors as predictors of the age of onset of schizophrenia is debatable. Unfortunately, there is a significant dearth of studies in developing countries such as Nigeria. This study involved a survey of patients with schizophrenia ($n = 1,445$; $N = 2,393$), from March 2014 to March 2016, from a psychiatric hospital in southwest Nigeria. Structured diagnostic interviews were used to confirm diagnosis. Females had a higher age of onset ($M = 34.91$, $SD = 15.52$) compared with males ($M = 28.78$, $SD = 10.62$; $p = .00$, $M = 32.74 \pm 12.96$). Gender and marital status were the only variables significantly related to the age of onset ($p = .00$). Our model predicted 10.1% of the variability in the determination of the age of onset of schizophrenia.

General Scientific Summary

Gender and marital status were factors that were found to have significant associations with the age of onset of schizophrenia in Nigeria.

Keywords: schizophrenia, age of onset, gender, parental age, obstetric factors

Schizophrenia is a complex and multifaceted psychiatric disorder in which the pathogenesis and pathophysiology revolve around a combination of genetic, neurodevelopmental, and environmental factors (Cannon, Kaprio, Lönqvist, Huttunen, & Koskenvuo, 1998; Martens & van Loo, 2007; Rosso et al., 2000). Yet the

existence of several conflicting hypotheses makes it difficult to precisely define the complex interactions involved in the genesis of schizophrenia and their relationship with the age of onset. One such hypothesis is the neurodevelopmental hypothesis, which is based on the observations of structural changes in brain specimens and the frequently reported obstetric and birth complications in patients with schizophrenia compared with healthy subjects (Marenco & Weinberger, 2000). Such early insults and subtle changes in morphology of the developing brain have been reported in patients with schizophrenia with an early age of onset (Owen, O'Donovan, Thapar, & Craddock, 2011; Verdoux et al., 1997; Weinberger, 1987). Some researchers who advocate the aforementioned hypothesis proposed to use the age of onset as a criterion for schizophrenia classification (Jablensky, 2010).

On the contrary, the argument for a familial etiology cites the apparent pattern of inheritance in families of those with schizophrenia in patients with an early age of onset (Kendler, Tsuang, & Hays, 1987). Numerous studies have focused on the pattern of inheritance to gain an understanding of the genetic and familial factors in patients with schizophrenia. Study dynamics have often included individuals' sex and factors associated with their birth and family, such as birth order, maternal age, and paternal age at

This article was published Online First February 14, 2019.

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Exploring the Racial Diagnostic Bias of Schizophrenia Using Behavioral and Clinical-Based Measures

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There is evidence that African Americans are 2.4 times more likely to be diagnosed with a schizophrenia-spectrum diagnosis compared with White individuals, who are more likely to receive an affective diagnosis. The reason for these diagnostic discrepancies is unclear, however, 2 explanations have garnered attention: epigenetic differences and systematic error or bias in the diagnostic process. The latter is the focus of the present study and it is hypothesized that the bias involves cultural insensitivity on the part of the clinician. The present study has investigated bias-driven diagnostic disparities between African Americans and White individuals, by using traditional symptom rating scales, clinical diagnoses, and objective, behaviorally based measures. Data was aggregated from 3 separate studies conducted on outpatients ($N = 251$) with schizophrenia-spectrum or affective disorders. The present study used computationally derived acoustic markers of speech to tap hallmark negative symptoms (e.g., blunted affect or alogia) and behavioral-based markers of language failures to tap disorganization. Clinician symptom ratings were made using the Brief Psychiatric Rating Scale. Our findings confirmed the diagnostic bias between African Americans and White individuals though there were no differences on clinician symptom ratings. On the other hand, the computerized and behavioral measures revealed more speech disorder and less blunted affect in African Americans versus White individuals. Moderation analysis suggests that behaviorally based measures impact the relationship between race and diagnosis; however, this was largely unsupported for race and clinical symptom ratings. Further research is needed to disentangle normative variations from psychopathology.

General Scientific Summary

There exists a diagnostic discrepancy whereby African Americans are much more likely to be diagnosed with a schizophrenia-spectrum diagnosis compared with White individuals. This study found evidence for differences in diagnosis and some behavior-based measures, but not for clinician-rated symptoms, which suggests that further research is needed to understand how culturally relevant differences in communication truly manifest in psychopathology, and how they are inappropriately perceived as reflecting psychopathology.

Keywords: race, diagnosis, schizophrenia, behavior, symptoms

Racial status is associated with a differential diagnosis of severe mental illnesses; a finding that has been well documented but poorly understood (Olbert, Nagendra, & Buck, 2018). Of note, there is evidence that African Americans are much more likely to be diagnosed with a schizophrenia-spectrum diagnosis compared with White individuals, who are more likely than African Amer-

icans to receive an affective diagnosis (e.g., bipolar disorder, major depressive disorder; Strakowski, Flaum, et al., 1996; Strakowski, McElroy, Keck, & West, 1996). Moreover, in a large community sample of 19,213 patients, Minsky, Vega, Miskimen, Gara, and Escobar (2003) found that African Americans were more likely to be diagnosed with schizophrenia compared with both Latino and White individuals. Indeed, a literature search, using terms “Schizophrenia, Race, Bias,” yields a dozen studies documenting this phenomenon.

A review of the literature by Schwartz and Blankenship (2014) found a diagnostic bias in seven of eight studies and a recent meta-analysis of 52 studies by Olbert et al. (2018) found an overall odds ratio of 2.42; suggesting this effect is by no means benign. Furthermore, this effect is not limited to the United States and has been demonstrated in African-Caribbean individuals in England (Bhugra & Bhui, 2001; Sharpley, Hutchinson, Murray, & McKenzie, 2001) as well as in patient samples in Canada, the Nether-

This article was published Online First February 14, 2019.

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This study entitled “Secondary Analysis of Archived Speech Samples” was approved by the Louisiana State University Institutional Review Board, IRB E8352.

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