MURRAY STATE UNIVERSITY

Steeplechase: An ORCA Student Journal

Volume 6
Issue 2 *Spring 2023*

Article 12

April 2023

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STEEPLE CHASE

AN ORCA STUDENT JOURNAL

VOLUME 6: ISSUE 2

SPRING 2023

# A Bayesian Examination of the Effect of a Mental Health Psychosocial Education Vignette on Stigma Toward Persons with Schizophrenia and Depression

Lainie Krumenacker

## ABSTRACT

Psychosocial education has been used to combat stigma in several settings, but familiarity with and exposure to mental illness may also be key factors in reducing stigmatizing comments and behaviors. In this study, we implemented a between-subjects design where participants were allocated into two groups: one who received psychoeducational information about mental health (i.e., the "education group") and one who received no psychoeducational information (i.e., the "control group"). Regardless of their group, all participants then read vignettes which discussed information about the diagnosis of schizophrenia or the diagnosis of depression. Following the vignettes, all participants completed a series of questionnaires inquiring about stigma toward the condition (e.g., "I would find it difficult to trust someone with schizophrenia") and their proximity with specific conditions (i.e., whether they or a family member had been formally diagnosed with a mental disorder). Overall, there was no effect of the psychoeducational condition, suggesting that participants who received this information did not differ in their anxiety toward individuals with schizophrenia or depression. However, there was a significant effect of participants in the schizophrenia condition, as they were more anxious toward persons with schizophrenia than those with depression. Lastly, participants who reported as having been diagnosed with a mental illness were less anxious about interacting with persons with mental illness compared to participants who reported no diagnosis. These results support existing literature that serious mental illness is more stigmatized than any mental illness and that stigma may be reduced by exposure and familiarity to mental illness rather than the current programs used.

## LAINIE KRUMENACKER

A nontraditional, first-generation student from New York, Lainie has lived in Southern Indiana with her son, Milo, for the last 8 years. While in Indiana Lainie has dedicated her life to her community and the mental health field. In addition to her work at Murray State's Psychological Center, she is currently employed at a local behavioral health hospital.

Lainie has developed an appreciation for research and has participated in our own Scholar's Week each year. This past November she had the opportunity to represent Murray State and present her work at ABCT in NYC and she will be attending MPA in Chicago this spring.

Lainie is in the last semester of her Clinical Psychology master's degree. When she graduates, she plans to continue her work within the community. She hopes to start a nonprofit organization to assist individuals with severe mental illness in their daily activities to prevent recurring hospitalizations.

## DR. GAGE JORDAN - MENTOR

Dr. Jordan is an assistant professor of clinical psychology at Murray State University. He received his doctorate in clinical psychology from Mississippi State University and completed his pre-doctoral internship at the Southwest Consortium in Albuquerque, NM. His primary research interests center around cognitive biases in depression; specifically, how some depressed persons come to actively avoid and/or fear positive emotions, such as joy or happiness.

**Literature Review**

According to the National Institute of Mental Health (NIMH), nearly one in five adults suffer from a diagnosable mental illness (NIMH, 2020). Overall, mental illness does not ostensibly discriminate, as it can impact all persons, regardless of age or race. Prevalence rates for certain conditions (e.g., clinical depression and anxiety), however, tend to be higher among females than males and in those with two or more races (NIMH, 2020). Regarding treatment options for mental disorders, patients often report the biggest barrier in receiving effective treatment as the cost of treatment (Statista, 2018). For example, according to a recent market intelligence report by Open Minds (2020), national spending on mental health services in the United States totaled $225.1 billion in 2019. Furthermore, payment for mental health services is disparate. According to GoodTherapy.org, a mental health directory for laypersons, the average cost of therapy ranges from $65 to $250+ per session (GoodTherapy.org, 2019). Empirical findings also support the notion that many prospective patients may not actively seek treatment for mental health-related concerns due to an inability to pay for these services (Rowan et al., 2013).

Notwithstanding these relevant financial concerns for individual patients, stigma against mental illness is also a significant barrier to mental health treatment. That is, there appears to be clear associations between individuals in distress who wish to seek help and whether they feel they are able to comfortably disclose their problems to others (Thornicroft, 2008). For example, individuals suffering from mental illness may not seek treatment for fear of being regarded negatively by their peers, loved ones, or even their provider (Shrivastava et al., 2012). Stigma manifests when an individual is thought to have qualities or characteristics that violate social

norms or what is socially acceptable in their culture (Link & Phelan, 2001). These violations may lead persons in our society to ostracize other individuals. Symptoms indicating mental illness are often stigmatized, and while many symptoms may remit after one has received appropriate care, treatment does not mitigate the effects of stigma overall as a risk factor. For example, an individual diagnosed with schizophrenia may complete a course of treatment and no longer suffer from its primary symptoms. Nonetheless, the individual will still carry the "label" of schizophrenia and as such, may be subjected to stigmatizing comments from others. Indeed, a strong literature base supports the notion that stigmatization and higher levels of "expressed emotion" (i.e., critical or hostile comments made to a person with a mental illness by members of their family) serve as risk factors for relapse in schizophrenia (Ma et al., 2021). In addition, individuals may experience "internal stigma" or self-stigmatization; that is, the shame an individual feels regarding their illness or the expectation of discrimination from others (Gray, 2002). As such, these persons may be concerned about causing shame to themselves or to their families (Thornicroft, 2008).

Interventions to reduce stigma among health care providers are uncommon and typically consist of continuing education and informational approaches which result in short term improvements (Thornicroft, 2016). When considering cultural competency among health care providers, current approaches have been criticized for leading to further stereotyping and disempowerment of patients, instead of focusing on programs with approaches that include cultural safety and cultural humility (Kirmayer, 2012). Recent research emphasizes the importance of approaching stigma reduction with a goal of systemic

cultural change with strong support from leadership (Knaak & Patten, 2016). A preponderance of research supports social contact as being the most effective way to reduce stigma, which can include hearing testimonies from individuals with mental illness about their recovery and experiences within the healthcare system (Knaak et al., 2014). Social contact does not automatically mean improved intergroup relations, however. The most effective social contact occurs when there is equal status between groups or participants and common goals (Thornicroft, 2016). These improvements can be made through programs that have been specifically developed to combat stigma while promoting staff health and well-being (Knaak et al., 2017). For this to be possible, facilities require access to the appropriate programs and resources; however, funding for mental health services is often limited.

The CDC (2021) projects more than half of Americans will be diagnosed with a mental illness in their lifetime, yet stigma against mental illness is not only relevant but considered a risk factor, affecting patient and provider alike. Although programs exist that may combat stigma, improve cultural competency among providers, and educate families on the importance of support, facilities are often limited on programs they provide due to allocation of resources and funds. Without a shift in treatment and programing, stigma will continue to impact patient care and outcome.

**Methodology**

In this study, we implemented a between-subjects design where participants were allocated into two groups: one who received psychoeducational information about mental health (i.e., the “education group”) and one who received no psychoeducational information (i.e., the “control group”). Regardless of their group,

all participants then read vignettes which discussed information about the diagnosis of schizophrenia or the diagnosis of depression. Following the vignettes, all participants were presented with a series of questionnaires inquiring about their stigma toward the condition (e.g., "I would find it difficult to trust someone with schizophrenia") and their proximity with specific conditions (i.e., whether they or a family member had been formally diagnosed with a mental disorder).

Participants ($N$ = 107) were recruited through the SONA system and were directed to Qualtrics to complete the series of questionnaires. For this study, stigma was operationalized based on the respondent's anxiety toward individuals with mental illness (e.g., "I don't think that I can really relax and be myself when I'm around someone with a mental illness"). Based on our operationalization of proximity, participants fell within the following categories: they themselves have been diagnosed and have a loved one who has been diagnosed ($N$ = 27); they themselves have been diagnosed but do not have a loved one who has been diagnosed ($N$ = 6); they themselves have not been diagnosed, but have a loved one who has been diagnosed ($N$ = 24); and they themselves have not been diagnosed and do not have a loved one who has been diagnosed ($N$ = 50).

We hypothesized that, overall, participants would be more stigmatizing toward schizophrenia than depression and that participants who received the psychoeducational piece were less likely to stigmatize any condition. We further hypothesized that participants who were closer in proximity with mental illness (i.e., they or a family member have been formally diagnosed) would have less anxiety towards individuals with mental illness. We chose a Bayesian paradigm because interpretation of results allows one to directly test the

plausibility of the null or alternative hypothesis (e.g., whether or not the psychoeducational piece "worked"). A Bayesian framework and analysis differs from more traditional "frequentist" frameworks (e.g., *t* and *z* distributions) in that the Bayesian paradigm estimates the population parameter as a distribution of values as opposed to a single number (Finch & Bolin, 2016).

Within the framework, there are three primary attributions of Bayesian estimation: 1) a *prior distribution*, which reflects the background knowledge of parameters in the model being tested; 2) the information contained in the data itself (i.e., observed evidence expressed in terms of a likelihood function); and 3) the *posterior distribution*, reflecting a combination of 1) and 2) that summarizes the updated model's knowledge balancing the prior distribution and observed data (Hox et al., 2018). For this study, noninformative priors were selected, which allows the model to rely on observed data to obtain parameter estimates (Finch & Bolin, 2016). Overall, to our knowledge, there is little research testing the effects of psychoeducational pieces in students. Thus, these results can inform future studies' priors for Bayesian analyses.

In the results presented below, the estimation of "significant" v. "non-significant" results is based on interpretation of the posterior distribution of each model. The posterior distribution includes a mean and standard deviation with an associated upper- and lower-bound credible interval (CI). As Bayesian analysis is an iterative sampling and updating process, the mean, standard deviation, and CIs provide an understanding of the "spread" of the effect of an independent variable on the dependent variable. Typically, if a credible interval includes 0 within its range, this result suggests a non-significant effect or interaction, which provides an analogue to

the tests' frequentist counterpart (i.e., an ANOVA based on an *F* distribution).

**Results**

A Bayesian 2 X 2 ANOVA (vignette: psychoeducation v. none; condition: schizophrenia v. depression) was run to examine the effects of these independent variables on anxiety toward persons with mental illness.

Overall, there was no effect of the psychoeducational condition, ($M_{posterior}$ = 0.15, $SD_{posterior}$ = 0.74), 95% credible interval (CI) [-1.32, 1.64], suggesting that participants who received this information did not differ in their anxiety toward individuals with schizophrenia or depression. However, there was a significant effect of participants in the schizophrenia condition. That is, they appeared to be more anxious toward persons with schizophrenia than those with depression, ($M_{posterior}$ = 5.10, $SD_{posterior}$ = 0.78), 95% credible interval (CI) [3.55, 6.66].

| Group | Vignette | *N* | Mean | *SD* |
|---|---|---|---|---|
| Education | Depression | 23 | 15.74 | 7.51 |
| | Schizophrenia | 27 | 26.33 | 8.56 |
| No Education | Depression | 28 | 15.50 | 6.12 |
| | Schizophrenia | 29 | 25.97 | 9.30 |

*Table 1*. Descriptive statistics for participants in each group and condition

*Note.* Mean scores are from the anxiety subscale of the Day's Mental Illness Stigma Scale (Day, 2007).

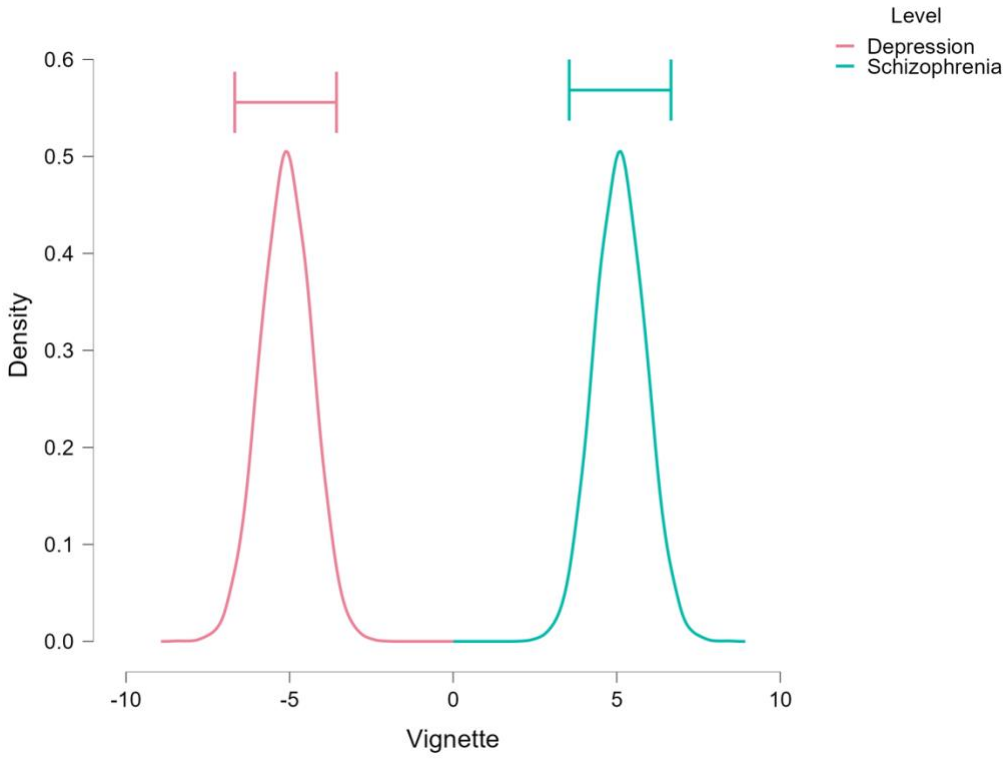


*Figure 1.* Posterior distributions of mean anxiety scores for participants in the depression and schizophrenia vignette conditions

A Bayesian ANOVA was conducted to examine the effects of proximity to mental illness on anxiety toward persons with mental illness. Overall, participants who reported having been diagnosed with a mental illness (*N* = 33) were less anxious about interacting with persons with mental illness compared to participants who reported not being diagnosed with a mental illness (*N* = 74), ($M_{posterior}$ = -3.91, $SD_{posterior}$ = 1.04), 95% credible interval (CI) [-5.98, -1.83]. However, there was a non-significant main effect of proximity based on having a loved one diagnosed with a mental illness ($M_{posterior}$ = -1.52, $SD_{posterior}$ = 0.93), 95% CI [-3.40, 0.32]. Further, there was a non-significant interaction between diagnosis status of oneself or one's loved one, ($M_{posterior}$ = 0.09, $SD_{posterior}$ = 0.92), 95% CI [-1.79, 1.92]. Results suggest those who have been diagnosed with a mental illness may be more comfortable interacting with similar individuals based on their own experience.

*Table 2.* Descriptive statistics for anxiety toward mental illness based on proximity condition.

| Group | Vignette | *N* | Mean | *SD* |
|---|---|---|---|---|
| Education | Depression | 23 | 15.74 | 7.51 |
| | Schizophrenia | 27 | 26.33 | 8.56 |
| No Education | Depression | 28 | 15.50 | 6.12 |
| | Schizophrenia | 29 | 25.97 | 9.30 |

*Note.* Mean scores are from the anxiety subscale of the Day's Mental Illness Stigma Scale (Day, 2007). "DxYesNo" = Having been personally diagnosed with a mental illness or not. "CloseDxD" = Having a loved one been diagnosed with a mental illness or not.

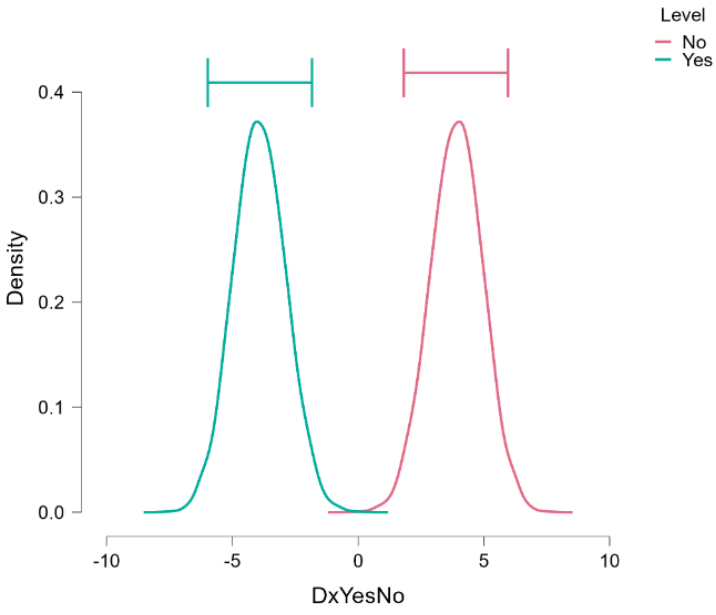


*Figure 2.* Posterior distributions of mean anxiety scores based on proximity to mental illness based on either being diagnosed with a mental illness or not ("DxYesNo")

**Conclusions and Implications**

These results support existing literature in that serious mental illness is more stigmatized than any other mental illness and current programs used to combat stigma may not be effective. Additionally, results suggest those who have been diagnosed with a mental illness may be more comfortable interacting

with individuals with similar diagnoses based on their own experience.

**Future Study**

Future research may consider more effective ways to mitigate mental illness-related stigma by using techniques such as social contact or testimonies from individuals with mental illness. Additionally, future research may consider how treating a mental health provider's own stigma may impact their stigma towards their patients.

**Acknowledgments**

I would like to express my profound gratitude to The Office of Research and Creative Activity (ORCA). Without their support of Murray State students in research, I would not have been able to present my work at ABCT in NYC. I would also like to acknowledge my faculty mentor, Dr. D. Gage Jordan. His support has been immeasurable, and I have learned a great deal from him over the last couple of years. To my cohort – Chelsey, Connor, Jeremy, Lindsey, and Olivia –each of them have deepened this experience in ways that made it life changing and something I will cherish. Lastly, to my partner and stability Zach, for showing up and reminding me regularly that I do not have to navigate life alone.

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