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## Genetic Counseling Students' Attitudes Towards Psychiatric Illness

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# **Genetic Counseling Students' Attitudes Towards Psychiatric Illness**

Thesis Manuscript

Submitted in partial completion of the Master of Science Degree at Sarah Lawrence College,

May 2019

Joan H. Marks Program in Human Genetics

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## **Abstract**

Mental illness is very common, with some estimates that up to 50% of the population will experience a diagnosable mental illness in their lifetime (Moffitt et al., 2010). Because of this, genetic counselors are likely to come across mental illness in patients throughout their careers. Stigma towards mental illness is a well-documented phenomenon, both in society and in the healthcare field (Mann & Himelein, 2004; Nordt, Rössler, & Lauber, 2006; Reavley & Jorm, 2011). It is possible that estimates of negative attitudes and stigma collected from genetic counseling trainees in past studies are underestimates, as they have relied on measures of explicit bias (Feret et al., 2011; Low et al., 2018). By measuring participants' implicit and explicit biases, this study aimed to gain a better understanding of attitudes towards mental illness held by genetic counseling trainees. We found that genetic counseling trainees held no implicit bias towards individuals with either physical or mental illness. This data suggests that underlying bias did not contribute to the unpreparedness reported by new graduates (Feret, Conway, & Austin, 2011a; Low, Dixon, Higgs, Joines, & Hippman, 2018), so genetic counseling trainees may be receptive to clinically relevant education pertaining to mental illness. These results could inform curriculum of genetic counseling programs and facilitate provision of services to this population.

## Introduction

Mental illnesses are very common, with some estimates that up to 50% of the population will experience a diagnosable mental illness in their lifetime (Moffitt et al., 2010). In fact, depression is the leading cause of disability in the world, with over 300 million people affected (World Health Organization [WHO], 2018). Given this prevalence, genetic counselors will almost certainly encounter patients with mental illness, regardless of their practice setting. Therefore, it is critical that genetic counselors are comfortable with and capable of discussing mental illness as we learn more about the genetic basis of these conditions. However, several studies have indicated that practicing genetic counselors do not feel comfortable or prepared to address psychiatric conditions in their practice (Ferret et al., 2011a; Low et al., 2018).

Individuals with mental illness are arguably one of the most stigmatized groups, which has consequences for seeking care and impacts quality of care received (Ferret et al., 2011a; Phillips, Pearson, Li, Xu, & Yang, 2002). These stigmatizing attitudes have been found not only in mental health professionals, but in genetic counselors as well (Ferret et al., 2011a; Low et al., 2018). These attitudes have been found to affect counseling (Martin et al., 2012); genetic counselors may avoid discussion of mental illness when taking a family history, reinforcing stigmatization of mental illness by healthcare providers and contributing to a barrier to healthcare (Ferret et al., 2011a; Lautenbach, Hiraki, Campion, & Austin, 2012). Historically, there have been various theories as to causes of mental illness, but all have invoked a combination of blame, shame, and guilt, which has cultivated a culture of stigma surrounding a diagnosis of mental illness that still exists today. In the context of mental illness, Corrigan et al. (2002) have further divided stigma

into public stigma - “ways in which members of the general public show prejudice and discriminate against people with serious mental illness” - and self-stigma, described as “ways individuals with serious mental illness turn against themselves as a result of living in a culture where mental illness stereotypes prevail.” Essentially, the former creates the latter and both types of stigma can have adverse effects on those with mental illness.

In addition to examining the overall effect of stigma on individuals with mental illness, it is important to look at the factors that contribute to stigma. Both implicit and explicit biases underlie stigma but may affect behavior in different ways. Many studies have attempted to quantify explicit bias using measures of social distance and stereotype endorsement (Anderson & Austin, 2012; Feret, Conway, & Austin, 2011b; Low et al., 2018; Nordt, Rössler, & Lauber, 2006; Reavley & Jorm, 2011). However, predictive validity of such measures is reduced when the topic is socially sensitive, as is true with mental illness (Greenwald et al., 2009). In these instances, relying on self-reported measures is more likely to provide “information about how people believe they *should* feel, but may still be in contrast to their behavior” (Kopera et al., 2015). In comparison, implicit bias measures rely on associations that are automatically activated outside of an individual’s awareness, making them resistant to external influences. However, implicit bias only allows one to see half the picture - without measuring explicit bias as well, it is difficult to determine how implicit one’s “unconscious” attitudes really are. Comparison between implicit and explicit biases is a crucial investigative tool. Much of the existing literature has focused on measures of explicit bias towards individuals with mental illness. While knowledge of explicit biases is valuable to understanding stigmatizing attitudes, a more holistic approach would also include measures of implicit bias, and many studies have suggested this as an area for further

research (Feret et al., 2011a; Kopera et al., 2015; Low et al., 2018; Reavley & Jorm, 2011). Understanding how both of these pieces contribute to stigma is essential to designing effective strategies to reduce pervasive negative attitudes towards individuals with mental illness. We aimed to explore genetic counseling students' attitudes towards people with mental illness through measures of explicit and implicit bias, with a focus on how factors such as year of training influenced these measures.

## **Methods**

### **1. Recruitment**

Subjects in this study were genetic counseling students enrolled in Masters programs in the United States and Canada, and recent alumni of those programs (2018 graduates). Subjects were recruited through an email to the Association of Genetic Counseling Program Directors (AGCPD) listserv describing the study and inviting their students to participate. The email included a link to the online survey using Inquisit software, made by Millisecond – a provider of software for research on psychological data. This email was forwarded to students at the discretion of the program directors. An electronic waiver of informed consent was provided prior to beginning the survey. The Sarah Lawrence College Institutional Review Board approved this study, 10-11-18.

### **2. Demographics**

Demographic questions pertained to graduation year, age, sex, and current gender identity. Additional questions to provide context on the participants' experience with mental illness asked if they themselves had experienced psychiatric illness, to rate their social and biological proximity to individuals with mental illness, and to describe the extent to which psychiatric illness had been discussed in their genetic counseling program.

### **3. Implicit Association Test (IAT)**

This study utilized the mental illness IAT from Millisecond, which can be found here: <http://www.millisecond.com/download/library/v5/iat/mentalillnessiat/mentalillnessiat.web>.

The test sets up two tasks in which 4 concepts, consisting of 2 opposing pairs (*e.g.* good/bad and mental illness/physical illness) are assigned the same key. Participants are then given instructions on how to classify each concept (*e.g.* pressing the "i" key for good/physical illness) and attempt to correctly classify words that pop up on the screen as quickly as they can. Respondents are required to correct mistakes before continuing, and the delay in classifying concepts to the 'correct' category is measured. In the second task, the associations are switched (*e.g.* good/mental illness) and the test repeats. The response times in each task are compared and this is the basis for the measure of implicit association (Greenwald et al., 2009). An overall score was issued for each participant, in which positive scores suggest a stronger association between 'Mentally Ill People-Dangerous' and 'Physically Ill People-Harmless' than for the opposite pairings and negative scores support a stronger association between 'Physically Ill People-Dangerous' and 'Mentally Ill People-Harmless' than for the opposite pairings. Consistent with previous work, absolute value of scores over 0.15 indicate a slight association, over 0.35 a



moderate, and over 0.65 a strong as per conventional criteria for effect sizes of Cohen's *d* measure (Greenwald, Nosek, & Banaji, 2003).

#### **4. Attitudes towards individuals with mental illness**

**Social Distance:** We used the social distance questionnaire originally developed by Bell, Johns, & Chen (2006) and used by Feret et al. (2011). This instrument measures how likely the participant would be to engage in relationships of varying closeness with an individual who has a psychiatric illness. Participants were asked to rate seven activities on a 4-point Likert scale in which 1 indicated 'definitely willing' and 4 'definitely unwilling'. This questionnaire was administered twice – the first time asking participants to consider an individual with depression and the second time asking them to consider an individual with schizophrenia. Scores for each individual item were summed to produce a single score for this scale (maximum score of 28).

**Stereotype Endorsement:** We used the 10-item, 5-point Likert-type stereotype endorsement scale used by Low et al. (2018) and validated for use with a variety of healthcare professionals (Nordt et al., 2006). This scale asked participants to rate their perceptions of someone with mental illness relative to someone without mental illness on seven negative and three positive characteristics, where 1 indicated 'much less,' 2 'somewhat less,' 3 'equal', 4 'somewhat more', and 5 'somewhat more'. This scale was administered twice – the first asking participants to consider an individual with depression and the second time asking them to consider someone with schizophrenia. The three positive items in the stereotype endorsement scale were reverse

coded in order to generate one total score (maximum score of 50) for which higher values indicate more negative views of individuals with mental illness.

## **5. Analysis**

Respondents were placed into one of three groups based on their graduation year: first-year students (2020 graduation), second-year students (2019 graduation), and recent graduates (2018 graduation). Analysis of each component part was in line with standard practice. Each aspect of the survey (items 2, 3, and 4 above) generated separate raw data linked to subject ID numbers. Responses with any missing data (*e.g.* Demographic, IAT, explicit questionnaire) were excluded from analysis. Microsoft Excel was used for descriptive statistics of demographic data, IAT scores, and social distance and stereotype endorsement responses ( $\pm$  standard error). Average scores for social distance and stereotype endorsement were summed to give an overall score for each measure. The mean scores between groups were compared using multivariate analyses of variance (ANOVAs) and t-tests. All analyses were performed with R Software version 3.5.2. (Team, 2013).

## **Results**

### **1. Subject Demographics**

After cleaning the data as described above, there was a total of 141 respondents – 48 (34%) first year students, 69 (49%) second year students, and 24 (17%) recent graduates. 92% of the

sample was female. All respondents reported being cisgender. The average age was 25.4 ( $\pm$  0.24) years old. Demographic data is summarized in Table I.

The average score for social and biological proximity was 3.28 ( $\pm$  0.07) and 2.93 ( $\pm$  0.09) respectively, using a scale where '3' indicates "somewhat close". The average score for program's coverage of psychiatric content was 2.02 ( $\pm$  0.10) indicating that students felt it was covered 'slightly'. First year students were asked not to respond to this question due to their minimal interaction with the curriculum at the time of the survey, so this average reflects responses from second year students and recent graduates (117/141).

Over half (56.6%) of respondents reported a personal history of mental illness. Of those, 57.1% indicated they had received a diagnosis, and 42.9% had no formal diagnosis. A wide variety of mental illnesses were reported. The following categories were identified: mood disorders (*e.g.* depression, anxiety); psychosis disorders (*e.g.* bipolar disorder); and other disorders (*e.g.* attention deficit hyperactivity disorder [ADHD], obsessive compulsive disorder [OCD]). Table I illustrates the number of respondents in each category, and a more detailed breakdown can be found in the supplementary table.

## **2. Implicit Association Test**

Overall, the participants in this study demonstrate no implicit bias against mental illness. As illustrated in Figure 1, the IAT scores follow a normal distribution with a mean score of -0.089.

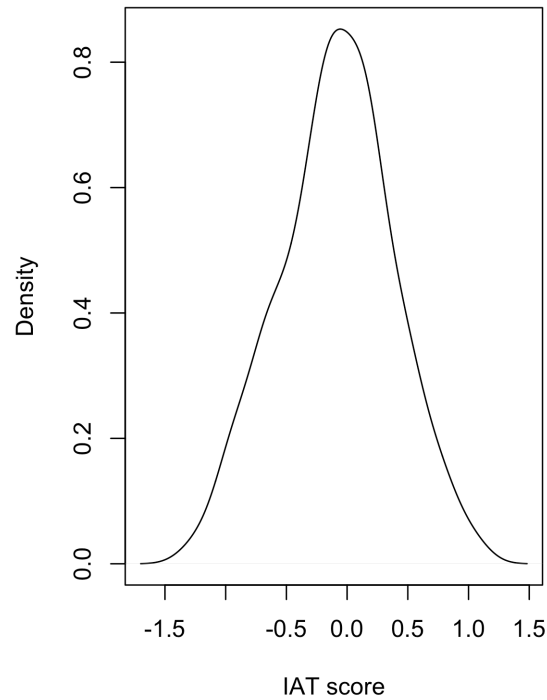


Figure 1: Distribution graph of respondents' IAT scores

Results from the ANOVA indicated no significant differences in IAT scores between the three cohorts ( $p > .05$ ). In order to check whether this null finding was due to the small sample size of the recent graduate group ( $n = 24$ ), this group was excluded from analysis. However, a t-test between the two remaining groups revealed no significant differences between first and second year students ( $p > .05$ ). None of the IAT scores reach the level of “slight significance” ( $|0.15|$ ) as defined by conventional criteria (Greenwald et al., 2003). Scores by group are summarized in Table II and illustrated in Figure 2.

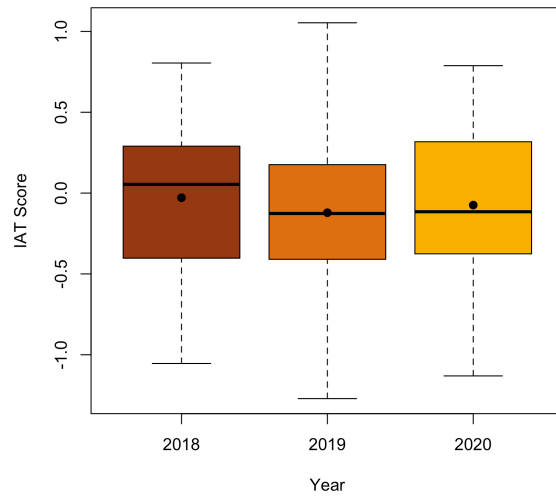


Figure 2: Boxplot of IAT scores by graduation year with mean values (back point) and median values (black line)

According to a t-test, IAT scores differed significantly ( $t=2.49$ ;  $p\text{-value}=0.01$ ) between respondents who reported a personal experience of psychiatric illness and those who reported no personal experience ( $t(df) = 2.49, p < .01$ ). This is illustrated in Figure 3.

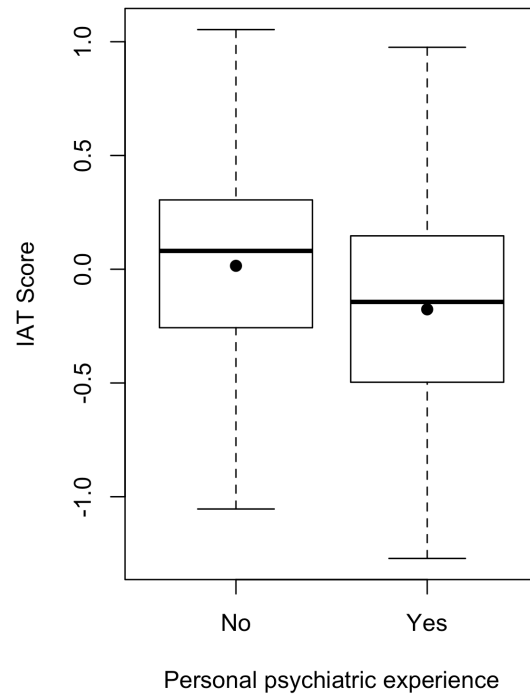


Figure 3: Boxplot of IAT scores based on personal experience with psychiatric illness

The mean IAT score for those who answered ‘no’ to the question ‘have you yourself ever experienced psychiatric illness?’ was 0.01. Those who answered either ‘yes’, but I was not diagnosed’ or ‘yes, and I was diagnosed’ had a mean IAT score -0.18. While the former score does not reach Cohen’s *d* score cutoff, the latter score of -0.18 indicates a slight association between physically ill individuals and ‘dangerous’ in the group of respondents who answered ‘yes’ to having personal experience with psychiatric illness. The dichotomous nature of the IAT precludes the interpretation of this number as ‘less’ bias against individuals with mental illness.

### 3. Attitudes towards individuals with mental illness

**Social Distance:** Responses to the social distance questionnaire for depression and schizophrenia are summarized in Table III. Social distance scores are not normally distributed and as such non-parametric Wilcoxon tests were conducted. Both overall and within groups, social distance scores for schizophrenia were found to be significantly higher than those for depression ( $p < 0.001$ ) as illustrated in Figure 4.

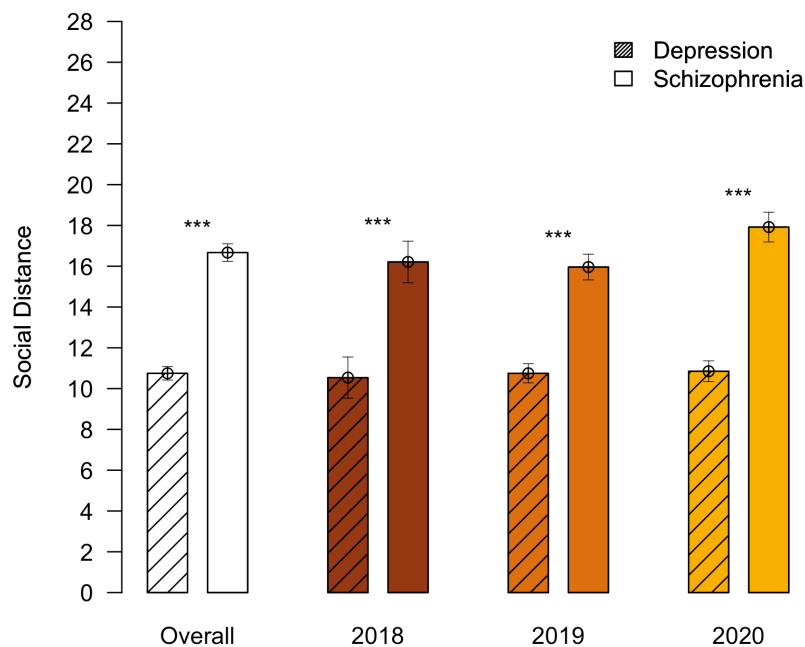


Figure 4: Bar graph of social distance scores by graduation year

**Stereotype Endorsement:** Responses to the stereotype endorsement questionnaire for depression and schizophrenia are summarized in Table IV. Stereotype endorsement scores were

not normally distributed; as such non-parametric Wilcoxon tests were run on the data. Overall, and in the 2018 and 2020 graduate groups, stereotype endorsement scores for schizophrenia were significantly higher than for depression ( $p < 0.001$ ). On the contrary, in the 2019 graduates group, scores were significantly higher for depression than schizophrenia ( $p$  value  $< 0.001$ ). This is illustrated in Figure 5.

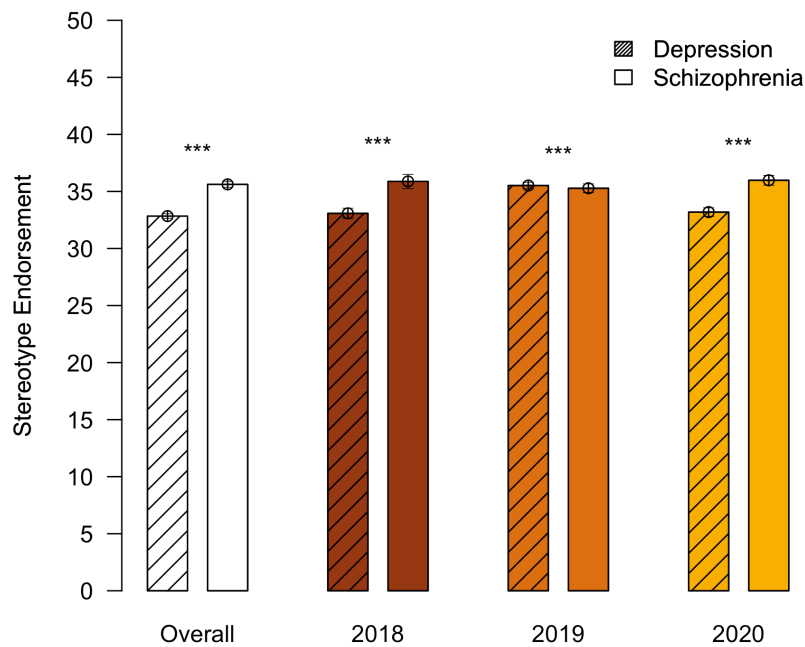


Figure 5: Bar graph of stereotype endorsement scores by graduation year

## Discussion

In this study, we found that genetic counseling trainees held no implicit bias towards individuals with either physical or mental illness and this was consistent across several cohorts. There are several possible explanations for this finding. One explanation for the low levels of implicit bias is the ratio of males to females in this field. Gender has been found to affect levels



of stigma towards mental illness (Wang, Fick, Adair, & Lai, 2007), so as the genetic counseling field is dominated by females (roughly 95% of practicing GCs are female (National Society of Genetic Counselors, 2018)), it is possible that levels of implicit bias are lower in this profession than in others where the male to female ratio is more balanced. While males are actually slightly overrepresented in this study (7.8%) as compared to the profession overall (5%) (National Society of Genetic Counselors, 2018), there was still a lack of power in this group such that analysis of the effect of gender was not performed. Further, the average age of our cohort was 25. This generation is more open about and aware of mental illness than past generations (Lorusso & Barnes, 2018). Public acceptance and awareness about mental illness could explain the low IAT scores in our cohort. Additionally, higher levels of education are associated with lower implicit bias towards mental illness (Stull, McGrew, Salyers, & Ashburn-Nardo, 2013), and this study surveyed graduate students.

It is possible that those who choose to go into the field of genetic counseling have lower levels of implicit bias than do the general population. Part of being a genetic counselor is having empathy and not passing judgement on patients, so perhaps personality types attracted to the field naturally have a lower level of implicit bias. This is supported by similar studies in other helping professions (Peris, Teachman, & Nosek, 2008).

The average scores of 3.3 and 2.9 for social and biological proximity, respectively, indicate that participants feel somewhat close to mental illness in both a social and familial setting, which may explain the overall lack of bias. Wang (2007) found that, particularly for women, reporting social closeness to individuals with mental illness correlated with lower levels of stigma.

The average score from second years' and recent graduates' responses to the question regarding the extent of coverage of psychiatric illness in their genetic counseling program indicate that participants feel mental illness is discussed slightly in their program. This was not found to be significantly different between the two groups ( $p$  value = 0.126), As such, this is unlikely to be a contributing factor to the low level of bias.

Perhaps most influentially, over half (56.6%) of our participants reported a personal history of mental illness, indicating increased acceptance or normalization based on first-hand experience. This is consistent with previous studies that show more positive attitudes towards psychiatric illness among those with a personal history (Angermeyer & Matschinger, 1996). There was found to be significant difference in IAT scores of those who had and those who did not have a personal history of mental illness. Due to the inherent limitations of the implicit association test, we can only conclude from this that participants who experienced mental illness hold a slight association between 'physical illness' and 'dangerous', rather than a lower level of implicit bias towards mental illness. Whether this implicit bias in fact reflects true bias to those with a physical illness, or is simply an artifact of the test is indistinguishable based on these data.

Stigma related to mental illness extends beyond the confines of a genetic counseling session and creates a barrier to psychiatric services that has ramifications for both the individual and the healthcare system. These stigmatizing attitudes can adversely affect quality of care, particularly in situations where the service provided contains a counseling element (Feret et al., 2011a; Low et al., 2018). Encouragingly, our findings indicate that the genetic counseling students in our sample do not have bias against individuals with mental illness. However, the fact remains that graduates feel underprepared to address issues related to mental illness as they enter the clinic.

Low et al. (2018) reported only half of genetic counselors surveyed felt prepared to discuss mental illness during a counseling session at the time of graduation. Further, there is still much interest in genetic counseling among individuals and families with mental illness despite the lack of genetic testing and a high level of satisfaction from those who have received it. Effective genetic counseling and lack of genetic testing have not been shown to be mutually exclusive in the eyes of the patient (Lyus, 2007; Meiser, Mitchell, McGirr, Van Herten, & Schofield, 2005; Quaid, Aschen, Smiley, & Nurnberger, 2001). It is therefore imperative to discern sources of feelings of unpreparedness among genetic counselors, if not from implicit bias.

Due to the current lack of genetic testing for conditions that are rife with associated stigma and misconceptions, evidence-based models of genetic counseling are particularly important in psychiatric genetic counseling (Costain, Esplen, Toner, Hodgkinson, & Bassett, 2014). There are challenges of understanding etiology, giving recurrence risk, and helping patients to make life-changing decisions (Austin & Honer, 2005, 2007; Peay et al., 2008). Social stigma attached to mental illness introduces added difficulty during counseling interventions. However, as with many other complex disorders for which the exact etiology is unknown, this does not mean patients would not benefit from learning what is currently understood (Peay et al., 2008). Even in uncertainty, there is much genetic counselors can do to help patients including describing causes of illness, communicating individualized recurrence risks, providing a safe place for patients to discuss their concerns, recognizing when mental illness may be syndromic, discussing phenotypic variation, and stressing the importance of early intervention. Most importantly, genetic counselors can address mental illness as they would any other referral to minimize stigma and correct misconceptions (Peay et al., 2008).

Our data indicate that genetic counselors' unpreparedness to discuss mental illness is not a function of bias, which may suggest they would be open and amenable to clinically relevant education on counseling about mental illness, such as specific techniques on how to counsel those who have experienced mental illness themselves or in a family member. However, education and awareness are not the only potential solutions; therapeutic alliance can still be promoted when a genetic counselor shows empathy and acknowledges the difficult experience of having an affected family member (Lautenbach et al., 2012). Strategies for enhancing genetic counseling practice related to mental illness remain an area for future study.

### **Study Limitations**

The current study has several limitations. Recruitment was dependent on program directors' discretion of forwarding the survey to their students; it is likely this data does not represent all genetic counseling training programs. Furthermore, because we did not collect data on where participants studied, we are unable to comment on whether programs differ in measures of student bias or program content of psychiatric illness. The recent graduate group was underpowered, comprised of only 24 individuals. Most participants (56.5%) indicated a personal history of mental illness, which may represent self-selection bias in that students familiar with or interested in psychiatric illness were more likely to participate. However, this proportion reflects some estimates that up to 50% of the general population may suffer from mental illness (Moffitt et al., 2010), and may simply be a function of the incidence of these conditions. No information was collected on whether mental illness experiences were current or well-controlled. Other limitations of the sample include the lack of males and the young age of respondents, although

both of these reflect demographics of the field with 95% of genetic counselors identifying as female and 70% under the age of 40 (National Society of Genetic Counselors, 2018). As with other similar studies (Feret et al., 2011a; Monaco, Conway, Valverde, & Austin, 2009), this study is subject to the effects of social desirability phenomenon despite anonymous responses - that is, respondents answering based on how a 'good genetic counselor' should, rather than expressing their true views. For this reason, we chose to focus mainly on levels of implicit bias, which are more resistant to this. An inherent limitation of using the IAT is the use of an opposing variable (in this case, physical illness), providing information on a non-target trait, which may be misleading. A 'preference' for one category or the other may mask bias towards both groups. The IAT for this study grouped all mental illnesses under one heading, whereas we found significantly more negative explicit views towards schizophrenia than depression. Despite these limitations, this study may shed light on underlying reasons for new genetic counselor's discomfort and help target interventions aimed at education rather than reducing bias.

## **Research Recommendations**

Further research into sources of the discomfort surrounding mental illness in the genetic counseling field is warranted. Graduates have reported in previous studies that their training was inadequate, ineffective, and that they received an overall lack of instruction leading to limited comfort (Low et al., 2018). This discomfort has had both a negative impact on their preparedness to discuss mental illness in clinic and on mental illness stigmatization (Low et al., 2018). Perhaps looking at this issue through a different lens and not one fueled by bias would be useful. Monaco et al. (2009) found that some genetic counselors reported feeling unsure of the value of their

services, which may be partially due to feeling incapable of showing a comprehension of families' unique experiences with these conditions (Lautenbach et al., 2012). As a result of these findings, we agree that there is a need for training programs to provide education with a goal of increasing knowledge and confidence in assisting families affected by these conditions.

A longitudinal study to show implicit bias changes in individuals over the course of their training may be worthwhile to elucidate how biases change with education and exposure, as this was not clear from our study, which was cross-sectional in nature.

Finally, due to limitations of the IAT used in this study, the results indicated a preference for one group over another. Rarely do social groups exist in such a dichotomous state, so these results may be misleading. It is entirely possible that a participant has negative beliefs about both groups in the test, but holds one less strongly. Future research on this topic might use a 'go/no go' test construct, as used by Kopera et al. (2015), to look solely at mental illness without an opposing variable.

## **Practice Implications & Conclusions**

Mental illnesses are common in the general population, and it is very likely that genetic counselors will encounter individuals with these conditions in clinic regardless of the indication for referral. Despite proficiency and comfort in explaining other complex multifactorial diseases for which no genetic testing is available (*e.g.* diabetes), genetic counselors have expressed discomfort in addressing psychiatric conditions with their patients. Based on the results from this study, implicit bias towards mental illness does not appear to be a contributing factor to this discomfort. This suggests that future studies or interventions to bridge the gap between patients'

desire for psychiatric genetic counseling and counselors' discomfort should focus on better equipping counselors with information and techniques on how to clinically address concerns surrounding mental illness as opposed to decreasing bias.

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## Supplemental Material

Table I: Respondent Demographics

Characteristic	N	Percent
Age (Years)		
21-25	87	62
26-30	44	31
31-36	10	7
Graduation Year		
2018	24	17
2019	69	49
2020	48	34
Gender		
Male	11	7.8
Female	130	92.2
Personal Psychiatric Experience*		
No	64	45.4
Yes*	77	56.6
Mood	63	81.8
Psychosis	2	2.6
Other	11	14.3

\*One respondent who indicated they had personal experience with psychiatric illness chose not to share the specific diagnosis.

Table II: Respondents' IAT Scores

<b>Group</b>	<b>Average IAT Score (<math>\pm</math> Standard Error)</b>
2018 Graduates (Recent Graduates)	-0.03 $\pm$ 0.10
2019 Graduates (Second Year Students)	-0.12 $\pm$ 0.06
2020 Graduates (First Year Students)	-0.07 $\pm$ 0.4
Overall	-0.09 ( $\pm$ 0.04)

Positive scores suggest a stronger association between 'Mentally Ill People-Dangerous' and 'Physically Ill People-Harmless' than for the opposite pairings and negative scores support a stronger association between 'Physically Ill People-Dangerous' and 'Mentally Ill People-Harmless' than for the opposite pairings. Absolute value of scores over 0.15 indicate a slight association, over 0.35 a moderate, and over 0.65 a strong as per conventional criteria for effect sizes of Cohen's *d* measure

Table III: Respondent's Social Distance Scores

<b>Group</b>	<b>Median Social Distance Scores – Depression (Mean ± Standard Error)</b>	<b>Median Social Distance Scores – Schizophrenia (Mean ± Standard Error)</b>
2018 Graduates (Recent Graduates)	9.5 (10.54 ± 1.01)	15.5 (16.21 ± 1.02)
2019 Graduates (Second Year Students)	9 (10.75 ± 0.47)	16 (15.96 ± 0.63)
2020 Graduates (First Year Students)	10.5 (10.85 ± 0.51)	18 (17.92 ± 0.73)
Overall	10 (10.75 ± 0.33)	17(16.67 ± 0.43)

Scores of a 4 point Likert scale in which 1= definitely willing and 4= definitely unwilling were summed, so higher scores correspond to greater desire for social distance

Table IV: Respondent's Stereotype Endorsement Scores

<b>Group</b>	<b>Median Stereotype Endorsement Scores – Depression (Mean ± Standard Error)</b>	<b>Median Stereotype Endorsement Scores – Schizophrenia (Mean ± Standard Error)</b>
2018 Graduates (Recent Graduates)	33 (33.08 ± 0.45)	35.5 (35.88 ± 0.62)
2019 Graduates (Second Year Students)	32 (35.52 ± 0.28)	35 (35.28 ± 0.38)
2020 Graduates (First Year Students)	33 (33.19 ± 0.38)	36 (35.98 ± 0.43)
Overall	33 (32.84 ± 0.20)	36 (35.62 ± 0.26)

Scores of a 5 point Likert scale in which 1= much less, 2=somewhat less, 3=equal, 4=somewhat more, and 5 = much more were summed (with positive characteristics reverse scored), so higher scores correspond to greater negative stereotype endorsement.

Supplemental Table: Detailed Psychiatric Diagnoses

<b>Diagnosis</b>	<b>Number</b>
Depression	13
Anxiety	21
Depression and Anxiety	26
Panic Attacks, Depression, and Anxiety	2
Bipolar Disorder 2, Generalized Anxiety Disorder, and Panic Disorder	1
Depression, Anxiety, and Trichotimllomania	1
Obsessive Compulsive Disorder and Anxiety	1
Depression and Anorexia	1
Anorexia	2
Depression, Anxiety, and Post Traumatic Stress Disorder	1
Adjustment Disorder with Depression and Anxiety	1
Generalized Anxiety Disorder and Low Frustration Tolerance	1
Depression and Bipolar Disorder	1
Depression, anxiety, and attention deficit disorder	
Anxiety with obsessive compulsive tendencies	1
Anxiety and Panic Disorder	1
Acute Anxiety with panic attacks and obsessive compulsive trait	1

\*One respondent who indicated they had personal experience with psychiatric illness chose not to share the specific diagnosis.