The effects of viewing patient-related physiological data on students' mental health stigma

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The Effects of Viewing Patient-Related Physiological Data on Students’ Mental Health Stigma

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Abstract

Figuring out how to reduce the negative stigma of mental illness could prove useful to patients and mental health professionals. Previous research has suggested that emphasizing the biological and physiological components of mental disorders may affect how people with these disorders are perceived. Biogenetic explanations have been shown to lessen stigma towards mentally ill patients in some respects. The present study compared participants’ evaluations of a hypothetical depressed person whose description was accompanied by either an MRI of the patient’s brain or a picture of the patient’s sad face. Analyses compared participants’ responses on three aspects of stigma: social distance, blame/responsibility, and perceived danger/unpredictability. Results revealed the following trends: 1) Participants who saw an MRI rated John as more trustworthy and predictable. 2) Participants who viewed an MRI also rated John as having more need for medication than the non MRI participants. Participants’ Level of Contact with mentally ill persons was not significantly related to any of the outcome variables measured.
The Effects of Viewing Patient-Related Physiological Data on Students’ Mental Health Stigma

Stigma, defined as negative beliefs people have about something, has been an ever-present concern in the mental health field. Long-term stigma of people suffering from mental illness has not decreased significantly among the general public, mental health professionals, or those suffering from the mental illness themselves (Smith and Cashwell, 2011). Rose, Thornicroft, Pinfold, and Kassam (2007) argue that stigma is mainly a conglomeration of three parts: ignorance, prejudice, and discrimination. Goffman (1963) describes the damaging effects of stigma, which “reduces the bearer from a whole person to one that is irredeemably tainted.” (Goffman, p. 3). In Goffman’s view, mental illness was one of the most deeply discrediting and socially damaging forms of stigma, such that people with mental illnesses start out with rights and relationships, but end up with little of either (Goffman, 1963 as cited in Stuart, 2008). Farina and Felner, (1973) cited in Penn, Judge, Jamieson, Garczynski, Hennessy, and Romer (2005) state that individuals with severe mental illness are less likely to receive employment, healthcare, or an apartment lease. Furthermore, individuals with a physical handicap are viewed more positively than individuals with mental illness. The abstract dimension of mental illness instills more fear in people than the more concrete physical ailments (Wahl, 1995, as cited in Penn et al., 2005).

The powerful influence of stigma on the mentally ill can determine if or when they seek treatment, and how effective treatment will be. While mental illness is in and of itself debilitating—both physically and emotionally—stigma can inflame the suffering already occurring in the individual, and may in some cases prove more harmful than the actual illness (Smith et al., 2011). Nearly half of Americans meet criteria for diagnosable mental illness at some point in their lifetimes, yet only one third of Americans seek mental health treatment.
Increased stress from stigma may lead those with mental illness to isolate themselves, potentially increasing symptoms and chances of relapse (Penn et al., 2005). Thus, Link, Yang, Phelan, and Collins (2004) write that, “The Surgeon General’s 1999 report on mental health notes that there is a strong consensus that, "our society no longer can afford to view mental health as separate and unequal to general health" (p. vii, Executive Summary, U.S. Department of Health and Human Services 1999).

Presently, there are over 250 terms used to describe people who are mentally ill; of those, nearly half are derogatory (Rose et al., 2007). These numbers indicate the reach of mental illness stigma in our culture. Research on the development of stigma has shown that, comparatively, children and young adults show far more embarrassment and stigma-related behaviors about their mental illness (Rose et al., 2007). Furthermore, young people are more likely to believe that the actions of a person with mental illness are his or her responsibility, and consequently act with more discrimination toward the person, as well as requiring more social distance (Rose et al., 2007).

A study conducted by Rose et al., (2007) explored young people’s (12 to 25) conceptions of people with depression or psychosis. In the study, participants were shown a vignette of the person with depression or psychosis and asked what type of help that person should seek, and when. Those who accurately identified the disorder were more likely to answer that the person should seek help from a therapist or other mental health professional. Rose and colleagues also studied which words students used to describe a person with mental illness. Most words used were negative or emotionally-charged. Factual knowledge about mental illness and the general psychiatric terms was low. This lack of knowledge acts as a contributing force for public stigma against those with mental illness. It stands to reason, then, that the more information provided to
the general public, the more understanding and less ignorance they will display toward people suffering from mental illness (Rose et al., 2007).

**Theories and Interventions**

Several theoretical frameworks may prove useful in the attempt to understand and battle the stigma of mental illness. The Stereotype Content Model (see King, Hebl, and Heatherton, 2005) holds that individuals are perceived as varying in regard to two traits deemed positive by society—warmth and competence. Asian Americans, for example, fall low on the warmth scale, but high on the competence scale, leading to an “envious prejudice” (King et al., 2005, p. 111). The warmth and competence scales for obese individuals are thought to be low, because the condition is both overt and thought to be controllable. The perceived controllability of the condition can be correlated with the amount of negative stigma placed on those with obesity (King et al., 2005, p. 111). The Stereotype Content Theory predicts that because those suffering from mental illness may also be perceived as having low warmth and competence (sufferers are often depicted as scary and unable to overcome their illness), they will be stigmatized.

Intergroup Emotions Theory states that the more power an ingroup possesses, the more discrimination people in the outgroup will receive (King et al., 2005, p. 112). The ingroup enjoys the aspects of being the “societal ideal,” while the outgroup is disregarded or negatively regarded as not possessing the normalcy shared by the ingroup. This, in turn, can lead to feelings of anger toward the outgroup (Jost and Banaji, 1994). Intergroup Emotions Theory may be applied to those suffering from mental illness; if the societal norm is not having a mental illness such as Major Depressive Disorder, those suffering from MDD are automatically placed in the outgroup, and therefore met with disdain and anger from the ingroup.
The Sociofunctional Approach attempts to delve more deeply into why stigmatization occurs. This approach seeks an evolutionary answer to the question of why stigmatization occurs between ingroups and outgroups (Jost & Banaji, 1994). Neuberg, Smitch, and Asher (2000) argue that, “stigmatization is rooted in an inherent biological need to live in effective groups in order to promote the survival of their genetic makeup. Individuals or groups who are perceived to threaten the survival of one’s ingroup will be stigmatized” (cited in King et al., p. 113).

Because of this, ingroups will take certain precautions in order to ensure that the outgroups do not threaten their survival. This can be displayed in forms of prejudice or anger, according to the Intergroup Emotions Theory (Jost & Banaji, 1994).

According to the System Justification Approach, both high status and low status individuals view the high status group more positively than the low status group. This could explain why, for example, thin individuals stigmatize those with obesity and obese individuals negatively stigmatize themselves (King et al., 2005). Inability to maintain the “status quo” can recreate the cycle of stigmatization between the high status and low status groups; for example, obese individuals exhibit low self-esteem because they negatively perceive their status. Obese individuals’ low self-esteem can then perpetuate the same negative attitudes toward themselves (King et al., 2005). One way to combat this reinforced social construct is to change the perception obese individuals have about themselves; in other words, increase their self-esteem so that this stigma does not perpetuate. This same approach may be used to combat the negative stereotypes many people suffering from mental illness receive and perceive.

Rhaman, (2001) discusses the impact that the modern media has had on perception of mental illness and, thusly how mental health stigma is shaped by the media representation. The inclusion of media into our daily lives means we now have a more sensationalized experience of
people, especially on television. Without knowing anything else about a person on TV, we can see how their actions can deviate from societal norms. Lack of a sufficient background allows us only to view the person as their immediate actions, therefore refusing them any depth other than their illness. (Klin and Lemish, 2008). Mental health sufferers are also more likely to experience shame and self-stigmatization when they view negative interpretations of mental illness. Many mental health sufferers know that “ outing” themselves can lead to external shame; because of this, they often do not seek treatment (Wahl, 1995).

Furthermore, people typically have higher happiness ratings when in a group with a person less fortunate than themselves. Thus, stigmatizing those with mental illness may help the majority feel superior (Rhaman, 2001). Just as children with low self-esteem may surround themselves with friends that make them feel better about themselves (i.e. friends whom they view as less than themselves), the mass population uses minorities to feel better about their own situations.

At the same time, however, members of the majority group often experience discomfort when faced with an individual deemed different than they are. This discomfort may lead to an aversion and to increased social distance between the majority and the minority (Rhaman, 2001). The Just World Theory allows the majority to justify this increased social distance from someone with mental illness because it implies that the illness would not befall upon the person without someone—whether it be the person themselves, or their parents—being responsible (Rhaman, 2001). Attributing an illness to biological factors lessens stigma, as it indicates that the person is not responsible for the illness. However, family members may receive “courtesy stigma” by sharing genes with the mentally ill individual (Penn, Judge, Jamieson, Grczynski, Hennessy, & Romer, 2005). Furthermore, approximately 90 percent of mental health workers have heard their
colleagues make negative comments about mental health patients. These clinicians often choose to stay quiet about mentally ill family members because of the stigma that permeates even mental health workers (Lefley, 1987).

**Current Studies**

Research has shown that negative social stigma regarding mental illness can affect how people who deal with mental health difficulties are perceived and treated. Several studies have explored how biological information will alter clinicians’ views and empathy toward mental health patients. Of these, most have concluded that instead of increasing clinicians’ empathy for patients, biological information decreases it (Lebowitz, 2014), though patients receive reduced blame when given biological explanations. Part of this decrease in empathy may be due to the idea of essentialism—that a person’s genetics are responsible for their set attributes. Psychological essentialism is, then, the belief that there is something genetically different about people with mental illness versus neurotypical, or “normal” populations (Lebowitz, 2014). Psychological essentialism also implies that those with mental illness have no chance of ever recovering—someone born with depression will have it the rest of his life, whereas someone who is suffering from depression because of a life circumstance, such as divorce, is capable of overcoming the illness.

Psychologists and clinicians also tend to categorize mental illnesses on a sliding scale—some illnesses, such as schizophrenia, are considered highly biological while others, such as adjustment disorders, are considered more psycho-social (Ahn, Proctor, and Flanagan, 2009). Furthermore, clinicians view highly biological illnesses as more treatable with medication, while they view psycho-social illnesses as more treatable with the use of psychotherapy. Some
researchers claim this denies us holistic treatment by making an artificial distinction between purely mental and purely physical disorders (Ahn et al., 2009). A question then presents itself as to whether integrating the biological and psychological aspects of mental illness in how we discuss and present these conditions will have any influence on peoples’ judgment of the mentally ill.

A recent meta-analysis performed by Kvaale, Gottdiener, and Haslam (2013) explored studies that attempted to find correlations between biogenetic explanations of mental illness and stigma. The analysis looked at three major components of stigma as dependent variables: blame/responsibility, perceived danger/unpredictability, and social distance.

Results showed that, in both between-subjects and within-subjects studies, biogenetic explanations significantly reduced blame, though only in cases where participants had clear-cut examples of either biogenetic mental illness or psychosocial mental illness. Regarding perceptions of dangerousness, the results revealed a trend suggesting that biogenetic explanations slightly increase perceived dangerousness of individuals with mental illness, as compared to the psychosocial or ambiguous explanations of mental illness. But findings did not reach statistical insignificance. Regarding social distance, the results revealed that biogenetic explanations had no impact on social distance. However, further analysis revealed that biogenetic explanations most often do not affect social distance when the explanation is genetic in within-subject designs, when participants see the biogenetic explanation versus no explanation, and when students are the research sample.

Regarding the biogenetic explanation’s effect on prognostic optimism or pessimism, result showed that biogenetic explanations increased pessimistic outlooks when participants in a within-subjects study viewed a biogenetic explanation and a psychosocial explanation. Between-
subject participants, however, had no significant increase in pessimism when looking at biogenetic explanations versus either no explanation or a multi-faceted explanation. Overall, the conclusion of the meta-analysis was that though biogenetic explanations are linked to decreased blame, perceived dangerousness and prognostic pessimism may increase (Kvaale et al. 2013).

Certain forms of biological information are particularly effective at persuading individuals of the validity of medical or scientific claims. For instance, McCabe (2008) explored the notion that incorporating images such as MRI scans into studies with other physiological data may lead to a greater credibility of the information than incorporating bar graphs with data or no image with data (McCabe, 2008). In McCabe’s study, participants read three separate articles summarizing fictional neuroscience research. Articles featured either a brain image, a bar graph, or no image at all. Participants then rated their perceived validity of the article. Participants rated the articles with brain images as having highest credibility, though articles with brain images or bar graphs were both rated higher in validity than the article with no image (McCabe, 2008).

The present study focused on the perception of individuals suffering from Major Depressive Disorder. Researchers explored how the presentation of a biological image (MRI scans of depressed patient’s brain) may elicit different reactions toward the patient than a presentation of an image of the patient’s face. As past studies have shown, the perception of the mentally ill is multi-faceted and while some aspects of it, such as blame, may be reduced with biogenetic explanations, other aspects such as prognostic pessimism may increase. Drawing on the results of Kvaale et al., (2013) and McCabe, (2008) the current study focused on assessing how different presentations of information regarding mental illness may affect both social distance and trustworthiness/unpredictability. In addition, the study also assessed whether exposure to mental health sufferers has any effect on participants’ perceptions of mental illness.
Methods

Participants

Fifty-three students from Otterbein University (45 women and 8 men) participated in return for research credit. Participants were randomly assigned to one of the two tasks. Informed consent was obtained from all participants. Five participants’ results were discarded because these participants did not fully complete the survey.

Materials and Procedure

Participants read one vignette about a hypothetical student, John, who was suffering from symptoms of depression (see Figure 1). For some participants, the vignette was paired with an image of an MRI scan showcasing the difference between John’s depressed brain and a neurotypical brain (see Figure 2). A caption underneath states, “John’s brain scan, on the right, indicates under-activation of positive emotions in response to positive stimuli. In contrast, the left scan (of a healthy comparison subject), indicates healthy levels of positive emotional response to positive stimuli.” Some participants viewed the vignette with a picture of John and his friends (see Figure 3), with a caption that states, “Below is a photo of John and his friends taken at a soccer tournament. John is on the far left. John’s friends noted that his mood at the tournament was flat and disinterested.”

After reading each vignette and viewing their respective photographs, participants were asked a series of questions (using a 5-point Likert scale). Seven of the questions assessed participants’ desire for social distance from John (for example, “How willing would you be to befriend John?” with answers ranging from “not at all willing” to “very willing.”) Two questions assessed participants’ view on John’s predictability and dangerousness, (“How predictable do you think John and his actions are?” and “How likely would you be to trust John?”). One
question asked participants’ perceived need for medication for John, and one question asked participants their perceived need for therapy for John. A Level of Contact report (Holmes, Corrigan, Williams, Canar, and Kubiak, 2014) was also used for a supplementary analysis. These questions addressed the participants’ previous exposure to people with mental illness, with Likert scale statements such as, “I observe people with mental illness consistently” (see Appendix A).

**Results**

*Calculation of Variables and Descriptive Statistics*

For variables that expressed averages, participants’ Likert scale ratings were added and averaged. Participants with a higher average (closer to 5) were considered to have both more exposure and less social distance. Discreet variables (i.e. those with “yes” or “no” answers, such as “Have you taken an abnormal psychology class”) were dummy-coded (yes=1) and summed up. Figure 1 displays the means and standard deviations for the entire sample on all variables of interest.

*Inferential Analyses*

A series of independent-samples *t* test compared individuals in the MRI and non MRI groups on our dependent variables of interest. There was no statistically significant difference in social acceptance between people who saw an MRI ($M=3.66, SD=1.04$) and people who did not see an MRI ($M=3.63, SD=0.89$), $t(48)=0.10, p=.92$. However, there was a trend in examining trustworthiness/predictability, such that individuals who saw an MRI rated John as more trustworthy and predictable ($M=3.39, SD=0.63$) than individuals who did not ($M=3.00, SD=0.79$), $t(48)=1.86, p=.07$; Cohen’s $d=0.55$. There was also a trend, such that subjects who saw an MRI rated John as having more need for medication ($M=3.50, SD=1.06$) than subjects who did not ($M=3.00, SD=.72$), $t(48)=1.90, p=.07$; Cohen’s $d=0.55$. Finally, there was no
statistically significant difference in perceived need for therapy between individuals who saw an MRI ($M= 4.20, SD= 1.06$) and individuals who did not ($M= 3.89, SD= .74$), $t (46)= 1.19, p=.24$. There was no significant difference in exposure between people who saw an MRI ($M=6.60, SD=1.89$) and individuals who did not ($M= 6.50, SD= 2.50$), $t (51)= 2.55, p=.12$. Every participant stated that they had experienced exposure to mental illness (of some kind) in their lifetime. Exposure and social acceptance were examined in relation to one another. These variables were not significantly related [$r (51)= .10, p=.50$].

**Discussion**

Inspection of the descriptive statistics indicates that participants were largely accepting of John, as indicated by the social acceptance mean (see Table 1). Participants reported similarly high levels of contact with mentally ill people. The MRI group also rated John as more trustworthy and predictable than the non MRI group, although the differences did not quite reach the accepted significance level ($p<.05$).

Intergroup Emotion Theory predicts that more stigma against the mentally ill occurs because people with mental illness are viewed as an outgroup; however, participants in this study reported high levels of social acceptance of John regardless of the condition. One possible reason why there was no significant difference between the MRI and non MRI groups with social acceptance could be that people with mental illness have become more integrated into society over time—historically, the mentally ill have been placed into mental institutions and, in many respects, hidden away from the rest of the world. As therapy techniques and medications have progressed, people with mental illness have been able to lead more productive and integrated lives outside of institutions. This integration into society may also have brought to light more peoples’ struggles with mental illness, making it more socially acceptable to discuss mental
illness in general. An increased education of and treatment of mental health symptoms also leads to more correct diagnoses. The increase in diagnoses may have lead to a society that deems mental illness more of a norm than in previous decades. More mental health diagnoses may also mean that people are exposed to mental illness through more intimate persons, such as friends or family members. The high acceptance levels of participants suggest that, contrary to the prediction of Intergroup Emotion Theory, neurotypical people may not always approach mentally ill people with only negative emotions.

The Stereotype Content Model states that the majority of the population views those with mental illness as low in both competency and warmth. This may no longer be true. Moreover, a potential reason for why the MRI individuals in this study viewed John as more trustworthy is that, because they saw medical evidence for John’s MDD, they viewed him as less blame-worthy for his illness. The non MRI individuals in the study merely read the vignette and saw a photo of John looking unhappy—who is to say that John has not brought this unhappiness onto himself? This would suggest not only a low warmth, but perhaps a low competency—not only does John have a sour attitude, he makes no attempts at making himself feel better. Another potential reason for this trend refers back to McCabe’s (2008) article on the effect of biological data on peoples’ acceptance of research evidence. Perhaps the participants in this study rated John as more trustworthy in the MRI condition than in the non MRI condition because of the presence of biological data increased their trust in the validity of John’s illness. This could also explain the high trust but relatively high desire for social distance: biological data can increase our perception of its validity but not necessarily inspire empathy in the same way that a photo of a person or animal can.
The trend between the MRI group and non MRI group for perceived need for medication is in line with past research on biogenetic explanations. Giving subjects medical data increases the perceived need for medication. When subjects only see psychosocial data, they are less likely to think the mental illness has a biological explanation or solution.

Limitations

Though the observed trends suggest that viewing biogenetic evidence has some effect on people’s perceptions of those with mental illness, the study produced several unexpected null findings as well. There are several explanations for these findings. The participants in this study were all undergraduate students in a Midwestern university. Participants in both conditions were mostly psychology majors, who may have a predisposition to be more accepting of those with mental illness. As seen in Table 1, the mean acceptance rate was relatively high and the range of scores quite narrow. A broader, more diverse group of participants may have yielded a different pattern of results. The study was also restricted by the gender ratio—there were significantly more females than males. A larger, more gender balanced sample might have produced different results. Furthermore, all participants attend a small, liberal arts school. Liberal arts colleges tend to emphasize tolerance of diversity in their curricula and educational activities. Therefore, the sample for this study cannot be considered representative, which limits the generalizability of the results. Level of Contact may have been restricted by range as well. Psychology students are more likely to desire careers where they will have high exposure to the mentally ill. Therefore, these students may have internships or volunteering experience that bring them in contact with more people who are mentally ill.

We should also consider the images and descriptions presented to the participants. Both groups of participants were shown the same vignette—only the images differed. It is
entirely possible that the description alone lent itself to an increased social acceptance overall. However, after performing a Cohen’s \( d \) for the trending variables, I found that the effect size for trustworthiness/predictable was medium (0.55). The effect size for perceived need for medication was also medium (0.55). The robust effect size suggests that my failure to find true significance (\( p<.05 \)) was due to the small sample size rather than to a weak manipulation.

Participants potentially viewed neither photo in a negative light because the description seemed representative of both images, rather than just the MRI or the psychosocial image. An additional limitation may have been that depression is viewed differently than other mental illnesses, such as schizophrenia. Typically, people with schizophrenia are viewed in a more negative fashion than people with illnesses such as anxiety or MDD (Manning and White, 1995).

**Future Direction**

Future research should include a larger, representative sample. This will ensure a greater range of social acceptance and exposure scores, unlike our group of psychology majors at a small, liberal arts college. A larger more representative sample will also help in examining whether the high acceptance trends found in the present sample are representative of the population at large. Obtaining more demographic information may be a vital aspect of future research, as it may allow researchers to look for the predictors of participants’ attitudes toward mental illness.

Expanding this research to include different disorders and conditions may help us gain a more nuanced view of how stigma may operate differently for different problems. It is possible that the participants in this study were more socially accepting of mental illness because the study was specific to Major Depressive Disorder. While the high acceptance rate is a positive finding, future studies could assess whether this acceptance is disorder specific to MDD or spans
across disorders such as Schizophrenia and Borderline Personality Disorder. Moreover, studying mental health professionals, in addition to lay participants may shed light on how stigma operates within the mental health treatment community itself.

Another future focus may be to expand on the work of Sayce (2000), who argues that there are internal and external components of stigma. Internal stigma signifies the shame that mental health sufferers often feel, while external stigma reflects society’s exclusion of those with mental illness. Employing the same study design but expanding it to analyze mental health sufferers’ feelings about *themselves* will allow us to see how to not only lessen external stigma, but internal stigma as well. Utilizing the System Justification Approach would also expand our knowledge of how mental health patients feel internally—do they view themselves as high status or low status individuals? Do mental health sufferers view themselves as low status individuals? Why?

Future research could also include aspects of Lebowitz, Ahn, and Nolen-Hoeksema’s (2013) recent study that assessed prognostic pessimism among mental health sufferers. This study focused mainly on analyzing biogenetic explanation’s influence on mental health sufferers. Future studies could incorporate biogenetic audiovisual explanations (such as Lebowitz et al., 2013) with MRI scans.

Continuing to gain information on peoples’ understanding of mental illness and consequently how they treat the mentally ill can lead us to more effective methods of education, dissemination, and treatment. Utilizing biogenetic data and psychosocial data in order to educate people about mental illness may increase the public’s perception of the validity of mental illness, as well as increase their empathy toward individuals who suffer with these illnesses. Not only will this benefit the general public—as some mental health stereotypes will be put to rest—but
clinicians’ stigma of their own patients may decrease as well. Decreased stigma should increase the chance that those with mental illness will seek help and that mental health clinicians will provide safe, effective, judgment-free services to those who need it.


Effects of Viewing Patient-Related Physiological Data on Students’ Mental Health Stigma


John is a sophomore political science major at Otterbein University. He was a good student in high school but is failing two of his courses at Otterbein because some days he feels as if he does not have enough energy to get out of bed and go about his day. John doesn’t seem to have an appetite, and whenever he and his friends go to the Cardinal’s Nest, he gets a few things to eat but only picks at his food. When his friends talk to him, they notice that he does not speak as passionately as he used to about politics, and he tends to not pay attention to conversation. John’s teachers have noticed that John lacks concentration during class and his thoughts seemed “scattered” in his essays and other assignments. John also doesn’t hang out with his friends as much as he used to. He prefers to stay in his room instead. John’s doctor has diagnosed him with Major Depressive Disorder.
John’s brain scan, on the right, indicates underactivation of positive emotions in response to positive stimuli. In contrast, the left scan (of a healthy comparison subject), indicates healthy levels of positive emotional response to positive stimuli.
Figure 3. Picture image.

Below is a photo of John and his friends taken at a soccer tournament. John is on the far left. John’s friends noted that his mood at the tournament was flat and disinterested.
Table 1
Means and Standard Deviations for Main Study Variable

<table>
<thead>
<tr>
<th></th>
<th>MRI (N=25)</th>
<th>Non MRI (N=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance</td>
<td>M=3.66, SD=1.04</td>
<td>M=3.63, SD=0.89</td>
</tr>
<tr>
<td>Predictability/Trust</td>
<td>M=3.39, SD=0.63</td>
<td>M=3.00, SD=0.79</td>
</tr>
<tr>
<td>Need for Medication</td>
<td>M=3.50, SD=1.06</td>
<td>M=3.00, SD=0.72</td>
</tr>
<tr>
<td>Need for Therapy</td>
<td>M=4.20, SD=1.06</td>
<td>M=3.89, SD=0.74</td>
</tr>
<tr>
<td>Exposure</td>
<td>M=6.60, SD=1.89</td>
<td>M=6.50, SD=2.50</td>
</tr>
</tbody>
</table>
Appendix A

Social Distance and Level of Contact Questionnaires

Social Distance

1. On a scale of 1-5 (1 being the lowest, 5 being the highest), how willing would you be to befriend John?
2. On a scale of 1-5, how willing would you be to room with John?
3. On a scale of 1-5, how willing would you be to have John as a neighbor (or living in the same dorm)?
4. On a scale of 1-5, how willing would you be to have John as a coworker?
5. On a scale of 1-5, how willing would you be to have John as a classmate?
6. On a scale of 1-5, how willing would you be to work on a group project with John?
7. On a scale of 1-5, how willing would you be to participate on a team with John?

Responsibility/Blame

8. On a scale of 1-5, how unpredictable do you perceive John or his actions?
9. On a scale of 1-5, how responsible do you think John is for his actions described in the vignette above?

Perceived Dangerousness

10. On a scale of 1-5, how dangerous do you perceive John or his actions?
11. On a scale of 1-5, how likely would you be to trust John?

Miscellaneous/Demographics

12. On a scale of 1-5, how necessary do you think medication is for John?
13. On a scale of 1-5, how necessary do you think therapy is for John?
14. Have you ever taken an abnormal psychology course at Otterbein (or elsewhere)?
15. What is your gender?

Level of Contact

Answer “yes” or “no” for each question.

1. I have watched a movie or TV show in which a character had a mental illness.
2. My job involves the treatment of people with mental illness.
3. In passing, I have observed someone who I believe has mental illness.
4. I observe people with mental illness consistently.
5. I have a mental illness.
6. I have a relative with a mental illness.
7. I have worked with someone who I knew had a mental illness.
8. I have never observed someone I knew to have a mental illness.
9. My job includes providing services to people with mental illness.
10. A family friend has mental illness.
11. I have watched a documentary about mental illness.
12. I live with someone who has mental illness.