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Title of Dissertation: Psychosis Simulation and Mental Health Video Effects on Young Adult Attitudes Toward People with Schizophrenia

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ABSTRACT

Title: PSYCHOSIS SIMULATION AND MENTAL HEALTH VIDEO EFFECTS ON YOUNG ADULT ATTITUDES TOWARD PEOPLE WITH SCHIZOPHRENIA

Danielle M. Denenny, Ph.D., 2016

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Public stigma towards people with schizophrenia is prevalent in the United States and interferes with seeking professional help, recovery, and quality of life. Brief interventions have been disseminated yet their active ingredients and impact on specific aspects of stigma are poorly understood. The present study evaluated the effects of two contact videos (one standard and one enhanced with factors theorized to facilitate greater effects), a psychosis simulation, and their combination on perceived dangerousness, social distance, belief in forced treatment, and negative emotions toward people with schizophrenia within a college-age population. Participants (N = 170) were each randomly assigned to one video (control, standard, or enhanced) and one audio recording (control or simulation). Two sets of analyses were conducted for each outcome: immediate effects (primary analyses) and three-week effects (secondary analyses), yielding eight 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVAs. Results indicated that the contact videos significantly reduced several negative attitudes and emotions when compared to the control video, although in many cases, this difference was not significant if the simulation followed the video. The enhanced video did not have greater effects than the standard video. Thus, contact videos have the potential for small

immediate and longer-term effects on stigma in a college-age population. Recommendations are made for optimizing interventions and future research directions.

PSYCHOSIS SIMULATION AND MENTAL HEALTH VIDEO EFFECTS ON YOUNG ADULT ATTITUDES TOWARD PEOPLE WITH SCHIZOPHRENIA

By

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Table of Contents

List of Tables

List of Figures

Psychosis Simulation and Mental Health Video Effects on Young Adult Attitudes Toward People with Schizophrenia

Mental Illness Stigma

Stigma constructs. In his treatises on social stigma, social theorist Erving Goffman defines *stigma* as an attribute, behavior, or reputation that is socially discrediting (Goffman, 1963) and as "spoiled identity" (Goffman, 1986). Stigma is later defined by the World Health Organization (WHO) as "a mark of shame, disgrace or disapproval which results in an individual being rejected, discriminated against, and excluded from participating in a number of different areas of society" (WHO, 2001). Building upon these conceptualizations of stigma, others have since advanced a theoretical framework for mental illness stigma (Corrigan et al., 2010; Corrigan & Watson, 2002; Thornicroft, Rose, Kassam, & Sartorius, 2007). Corrigan and colleagues define mental illness *public stigma* as the reaction that the general population has towards mental illness and people with cued marks of mental illness such as diagnostic labels and observable symptoms (Corrigan et al., 2010). Corrigan and others further propose that public stigma is not a unitary construct but is comprised of three different aspects: stereotypes, prejudice, and discrimination (Corrigan et al., 2010; Corrigan & Watson, 2002; Thornicroft et al., 2007). *Stereotypes* are generalized beliefs about social groups that are used to characterize individuals based solely on group membership (Corrigan et al., 2010). They are social knowledge structures learned by most members of society (Corrigan et al., 2010) that are often rooted in collective ignorance and that may develop "in defiance of all evidence" (Allport, 1954; p.189; see Hamilton & Gifford, 1976). *Prejudice* includes endorsed or subconscious stereotypes, known as cognitive biases, and emotional biases (Corrigan, 2004; Devine & Sharp, 2009). The extent to which

stereotypes are endorsed varies from complete disavowal to full endorsement (Jussim, Nelson, Manis, & Soffin, 1995). Common stereotypes about schizophrenia include the belief that people with schizophrenia are dangerous, incompetent, and to blame for their illness (Brockington, Hall, Levings, & Murphy, 1993; Corrigan et al., 2002). Common prejudicial reactions include fear and increased *social distance*, herein defined as perceived or desired degree of remoteness from a social group and its members, as evidenced in the level of intimacy tolerated (Hinshaw & Ciccetti, 2000; Pescosolido et al., 2010). The third facet of stigma, *discrimination*, is a behavioral bias, meaning any behavior that victimizes or coerces, socially excludes, or limits a marginalized group member's freedom, assistance, or opportunities (Corrigan & Kleinlein, 2005; Crocker, Major, & Steele, 1998; Major & O'Brien, 2005; Pettigrew & Taylor, 1990).

Theoretical models explaining the connections between stereotypes, prejudice, and discrimination in mental illness stigma are still evolving. Corrigan and colleagues' structural model of mental illness public stigma posits that when a signaling event activates a stereotype, an individual may inhibit the stereotype or respond in a biased manner in accordance with the stereotype (Corrigan et al., 2010). Further, there is empirical evidence that forms of bias may occur sequentially (e.g., a cognitive bias precedes discrimination) or independently, and that people can respond with prejudice or discrimination, even when seemingly unaware of any negative stereotypes underlying their reaction (Dovidio & Gaertner, 2010; Fiske, 1998).

Public stigma: U.S. prevalence and consequences. In the United States, people living with schizophrenia commonly report experiences of prejudice and discrimination in multiple major life domains (Corrigan & Shapiro, 2010; Liberman, 2008; Thornicroft,

Brohan, Rose, Sartorius, & Leese, 2009). Given the total cost of stigma to people with schizophrenia, many have argued that the stigma of the disorder is as damaging as the illness (Feldman & Crandall, 2007). Public stigma toward people with schizophrenia is a major barrier to receipt of timely and appropriate mental health services and has been linked to more severe and unremitting psychiatric symptoms (Corrigan, Larson, & Rüsch, 2009; Corrigan & Watson, 2002; Vogel, Wade, & Haake, 2006; Vogel, Wade, & Hackler, 2007). Public stigma has also been linked to poorer physical health, with biased health care systems and providers withholding needed medical services from consumers (Desai, Rosenheck, Druss, & Perlin, 2002). People with serious mental illness are also more likely to be perceived as dangerous by the police, be arrested, and spend more time in jail for similar offenses than people without mental illness (Teplin, 1990; Watson, Corrigan, & Ottati, 2004). They are also more likely to face discrimination in jobs, education, and housing and have elevated rates of unemployment, poverty, and homelessness (Clement et al., 2013; Hackler, 2011). In addition, stigma has been linked to lower quality of life, relationships, and social support for people with schizophrenia (Angermeyer & Matschinger, 2005; Corrigan, 2000; Liebert, 2003; Martin, Pescosolido, & Tuch, 2000; Pescosolido, 2013).

Public stigma is also the primary source of other stigmas of consequence. For example, a third of people with schizophrenia endorse clinically elevated levels of mental illness *self-stigma*, or internalized negative stereotypes (West, Yanos, Smith, Roe, & Lysaker, 2011). Common consequences of mental illness self-stigma include personal devaluation, acting in a defeated manner, and relinquishing valued goals and relationships (Corrigan et al., 2010; Corrigan & Watson, 2002). Moreover, public stigma

also damages communities and families of people with schizophrenia. Communities forgo valuable contributions from people with schizophrenia (Corrigan & Kleinlein, 2005) and family members often internalize biases toward people with schizophrenia or their family members, and this internalized stigma is associated with problems in family functioning and family member depression, anxiety, and social withdrawal (Catthoor et al., 2015; Ostman & Kjellin, 2002; Wahl & Harman, 1989).

Public stigma in young adults. For young adults with mental illness, public stigma presents major challenges to recovery and development. In part due to mental illness stigma, many students with mental illness do not finish college and so relinquish their desired careers and life goals (Time to Change, 2012). College graduation rates for students with mental illness are higher when students use academic accommodations, yet many do not apply for or decline accommodations, fearing instructor prejudice and discrimination (Corrigan & Wassel, 2008; Potts, Gillies, & Wood, 2001; Schomerus & Angermeyer, 2008). Graduation rates for college students with mental illness are also significantly higher for those with more social support (Salzer, 2012), and support tends to be higher for students who disclose to trusted peers (Salzer, 2012; Time to Change, 2012). Social support may also help protect young adults against additional psychiatric symptoms and problems in adjusting to a mental illness diagnosis (Ozbay, Fitterling, Charney, & Southwick, 2008; Yanos, Roe, Markus, & Lysaker, 2008). We previously found a strong association between psychotic symptom distress and self-stigma among young adults with lower peer support (Denenny, Thompson, Pitts, Dixon, & Schiffman, 2015).

Disclosure avoidance and intentional social avoidance have been linked to perceived stigma through path models (Yanos et al., 2008) and cross-sectional survey data from large young adults samples (Salzer, 2012). Disclosure avoidance is understandable since young adults with mental illness report disclosure-related social rejection (Garrett & Eccles, 2009; Time to Change, 2012). Moreover, many young adults view peers with mental illness as dangerous, disruptive, and less academically skilled (Olney & Brockelman, 2003; Salzer, 2012; Time to Change, 2012) and object to mental illness disclosures (Corrigan et al., 2015; Garrett & Eccles, 2009; Time to Change, 2012). In a survey of 1,393 students from five U.S. postsecondary institutions, 34% of students expressed the belief that students should keep mental illness a secret from others (Corrigan et al., 2015).

Specific aspects of public stigma: Dangerousness. There is evidence for several prevalent and interrelated stigmatizing attitudes and reactions toward people with schizophrenia, including belief in dangerousness. The vast majority of people with schizophrenia are not violent (Pulay et al., 2008). Nonetheless, a commonly held belief about people with schizophrenia is that they are dangerous (Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Jorm, Reavley, & Ross, 2012; Rüsch, Corrigan, Todd, & Bodenhausen, 2011). This belief is "far more pervasive in the U.S. than in the other Western countries" (Olafsdottir, 2007) and has become even more widespread since the mid-20th century (Nielssen, Malhi, McGorry, & Large, 2012; Pescosolido et al., 1996; Pescosolido et al., 2010; Steadman et al., 1998; Swanson et al., 2006). The most recent findings from a large national longitudinal survey of U.S. adults age 18 and older found that 60 percent of people believe that a person with schizophrenia is somewhat or very

likely to "do something violent toward other people" (Pescosolido et al., 2010). Another recent national survey estimated that 46 percent of U.S. adults agree with the statement that "people with serious mental illness are, by far, more dangerous than the general population" (Barry, McGinty, Vernick, & Webster, 2013).

In research, belief in dangerousness is one of the more commonly examined aspects of schizophrenia stigma, in part because of the widespread public misunderstanding of rates of violence (Jorm et al., 2012). The public's belief in dangerousness has been measured in a variety of ways (e.g., response to vignettes, direct questions about perceived dangerousness, implicit attribution tasks). Although no particular measure predominates (Jorm et al., 2012), the Attribution Questionnaire-27 (AQ-27; Corrigan et al., 2003) dangerousness subscale has been commonly used.

Several additional factors have been reliably associated with perceived dangerousness. As to be expected, dangerousness has been reliably highly correlated with fear (Corrigan et al., 2002; Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999; Penn, Kommana, Mansfield, & Link, 1999). Corrigan and colleagues (2001b), reported Pearson's r = .86 for the association between the Attribution Questionnaire subscales of dangerousness and fear. In a subsequent study, Corrigan and colleagues (2002) found evidence from confirmatory factor analysis that belief in dangerousness helps to maintain fear reactions to serious mental illness. Also, Blascovich and colleagues (2000, 2001) found evidence that fear is an automatic response to perceived dangerousness. Belief that people with schizophrenia are dangerous is also consistently associated with a stronger belief that the disorder is caused by a flawed character (Corrigan et al., 2001b; Jorm et al., 2012) and that people with schizophrenia should be segregated from the public

(Angermeyer, Beck, & Matschinger, 2003; Baumann, 2007; Corrigan, 2000; Corrigan et al., 2003; Link & Phelan, 2001; Rüsch et al., 2011). Moreover, perceived dangerousness is greater among people with less prior contact with people with serious mental illness (Alexander & Link, 2003; Corrigan et al., 2001b; Corrigan & Watson, 2007; Jorm et al., 2012) and among racial minorities (Corrigan & Watson, 2007; Jorm et al., 2012).

Specific aspects of public stigma: Social distance. Social distance is another prevalent aspect of schizophrenia stigma that has increased in the U.S. since the mid-20th century (Nielssen et al., 2012; Pescosolido et al., 1996; Pescosolido et al., 2010; Steadman et al., 1998; Swanson et al., 2006). The most recent U.S. General Social Survey study estimated that 49 percent of people do not want to socialize with someone with schizophrenia, 37 percent do not want someone with schizophrenia living near them, and 72 percent do not want someone with schizophrenia marrying into their family (Pescosolido, 2013). Findings from schizophrenia stigma studies suggest that the public experiences greater social distance from people with schizophrenia versus depression or anxiety disorders, and also greater social distance from men versus women with schizophrenia (Jorm & Oh, 2009; Pescosolido et al., 2010). Like much of the rest of the research on stigmatizing attitudes and emotions towards people with schizophrenia, research on social distance has relied upon self-report measures such as the Social Distance Scale (SDS; Link, Cullen, Frank, & Wozniak, 1987; Penn et al., 1994). Most of these self-report measures ask respondents for Likert rating responses to a vignette describing a single person with schizophrenia or psychotic symptoms in a real-world context (Jorm et al., 2012).

Several additional factors are reliably positively associated with greater desire for social distance from people with schizophrenia, including the belief that people with schizophrenia have a weak character, are to blame for their disorder, require segregation from the public, and cannot care for themselves (Angermeyer et al., 2003; Corrigan, Edwards, Green, Diwan, & Penn, 2001a; Corrigan et al., 2001b; Jorm & Oh, 2009; Penn et al., 1994; Phelan & Baslow, 2007; Rivera, De Arriba Rossetto, Pesqueira, & Otero, 2007; Smith, Reddy, Foster, Asbury, & Brooks, 2011). The median correlation between scales of social distance and perceived dangerousness is Pearson's $r = .40$ per a recent review of schizophrenia stigma studies (Jorm et al., 2012). Similarly, there is a strong correlation between social distance and fear, as measured by the SDS and AQ-27, respectively (Corrigan et al., 2001b). Corrigan and colleagues found evidence from an attitude-emotion-behavior path analytic model that fear triggers social distance from people with schizophrenia (Corrigan et al., 2001b; Corrigan et al., 2002).

Regarding socio-demographic factors that may influence social distance, a review suggests that people with less contact with people with serious mental illness endorse more social distance (Jorm & Oh, 2009). The association between social distance and knowledge of mental illness is more complicated. People with less knowledge of mental illness endorse more social distance from people with schizophrenia who have sought professional help while those with greater knowledge of mental illness endorse less social distance from help-seekers (Jorm & Oh, 2009).

Specific aspects of public stigma: Belief in forced treatment. Another key aspect of schizophrenia stigma is belief in the need for forced treatment of schizophrenia. People's attitudes toward coercive treatment have roots ranging from fear to compassion

(Brown, 2010) and most mental health experts agree that forced treatment is occasionally justified (e.g., immediate danger to self or others when treatment is refused). Nonetheless, an endorsement of forced treatment without strong caveats is a subtle yet important facet of stigma (Corrigan et al., 2003; Kisely & Campbell, 2014). According to a recent Cochrane Review of clinical trials involving 752 individuals with schizophrenia (Kisely & Campbell, 2014), there is no evidence to indicate that forced treatment yields significantly greater improvements in mental state, service use, social functioning, or quality of life versus offering evidence-based voluntary treatment (e.g., Intensive Case Management; Dieterich, 2010). Moreover, forced treatment poses significant risks including undermining treatment engagement, personal dignity, and right to self-governance (Corrigan et al., 2003; Kisely & Campbell, 2014). A study of the subjective experience of forced treatment by psychiatric patients ages 16 to 65 found that coercion is commonly experienced as profoundly dehumanizing (Newton-Howes & Mullen, 2011). Despite this evidence, many Americans still believe that forced treatment is generally appropriate. A nationally representative U.S. General Social Survey indicated that over 42 percent of people believe that people with schizophrenia should be forced against their will to participate in treatment, take prescription medication, and enter the hospital, even if there is no known danger to self or others (Pescosolido, Monahan, Link, Stueve, & Kikuzawa, 1999).

Regarding the relationship between belief in forced treatment of schizophrenia and other factors, this belief is most strongly associated with perceived dangerousness and fear (Corrigan et al., 2003). Public support for coercive treatment is near universal when people perceive any dangerousness to others (Pescosolido et al., 1999). Moreover,

there is some evidence for a significant association between this belief and less familiarity with serious mental illness (Corrigan & Watson, 2002).

Specific aspects of public stigma: Negative emotions. Negative emotional reactions to people with schizophrenia, such as anger and fear, are widely recognized by stigma experts as important to understanding discrimination and impact on the stigmatized. Yet emotional reactions have received less attention than other aspects of schizophrenia stigma in research. According to the attribution model of public discrimination towards persons with mental illness (Weiner, 1985), people who view mental illness as more controllable and blameworthy are more likely to express anger and exhibit hostile behavior (e.g., segregation or withholding help) toward people with mental illness. The model further posits that people who view mental illness as less personally controllable are more likely to feel pity rather than anger and to offer help. Research indicates that the U.S., many individuals view mental illness as personally controllable (Corrigan et al., 2000).

Perceived dangerousness has a strong influence on anger (Angermeyer & Matschinger, 2003) and anger has also been associated with avoidance, blame for illness, and segregation (Pingani et al., 2016; Sousa, Marques, Curral, & Queirós, 2012). In a recent study of stigma among college students using the AQ-27 stigma measure, the covariance estimate between anger/irritation and blame and between anger/irritation and segregation was .17 ($p < 0.001$) and .52 ($p < 0.001$), respectively (Pingani et al., 2016). In another study with a similar sample and the same measure (Pingani et al., 2011), covariance estimates were even higher between anger and blame (.47), anger and

segregation (.93), and anger and coercion (.51). Taken together, the research suggests that reducing blame could improve anger and belief in forced treatment.

Interventions for Public Stigma of Schizophrenia

Targeting young adults on campus. Given that public stigma of serious mental illness is so prevalent in the U.S., many experts in psychiatric stigma have called for a renewed focus on developing public stigma interventions that target groups with the power to meaningfully influence the lives of more vulnerable groups (Corrigan, 2004; Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012). Young adults arguably constitute a vulnerable consumer group as a considerable number will develop serious mental illness, cope with stigma, and seek psychological help for the first time, particularly during the college age years (Costello, Foley, & Angold, 2006; Garrett & Eccles, 2009; U.S. Department of Education, 2012). These young adults are frequently exposed to negative attitudes about mental illness from peers and social media (McGinty, Webser, & Barry, 2013), and many must confront mental health challenges while living away from close friends and family (Costello et al., 2006; Crisp, Gelder, Goddard, & Meltzer, 2005; Garrett & Eccles, 2009). Additionally, supportive peers can positively influence symptom severity, recovery, and the decision to seek professional help (Garrett & Eccles, 2009; Time to Change, 2012). In light of these significant and mixed peer influences, public stigma interventions are needed to influence young adult attitudes and reactions toward people with mental illness (Garrett & Eccles, 2009; Time to Change, 2012).

Interventions that target public stigma on college campuses could be particularly valuable since less stigma is related to higher graduation rates for students with mental illness and college graduates are more likely to assume positions that influence public

stigma and discrimination in the community as leaders, instructors, and health care providers. Although there are few programs that specifically target public stigma of mental illness on campus, campus psychological services teams, student activists, and non-profit campus chapters (e.g., Active Minds or National Alliance on Mental Illness) have worked to raise campus awareness of the problem of suicide and targeted stigma toward help-seeking (Commonwealth Honors College, 2014). A national survey of 765 college students with mental illness found that students with mental illness want more campus-based programs that inform all students about public stigma of mental illness, sensitive language, and ways that students can support their peers with mental illness (National Alliance on Mental Illness, 2012). Similarly, student activists at several colleges have publicly called for campus administrators to create strategic plans and policies to proactively address issues of public stigma on campus (Hiatt, 2015).

Intervention strategies and popular brief interventions. In the absence of research on targeted public stigma interventions for young adults on college campuses, I reviewed the literature on community interventions. Three main strategies have been used to address the public stigma of mental illness in the community: mass media communications, awareness campaigns, and brief interventions (Clement et al., 2013). The mass media communications approach uses media channels to reach people without face-to-face contact. An example is The Jed Foundation's Half of Us website (www.halfofus.com), which features mental illness information and personal stories from celebrities and young people on mental illness. Per a Cochrane systematic review (Clement et al., 2013), mass media interventions have demonstrated the potential for a small positive effect on some prejudicial attitudes, yet the number of studies and quality

of evidence limits confidence in these findings. A second strategy for addressing public stigma is through public awareness campaigns. National non-profits often use such campaigns (e.g., Active Minds National Day Without Stigma) to motivate local chapters to take action on stigma by hosting events and doing social media outreach. There has been minimal research on the effects of such mass media campaigns.

The third strategy for addressing public stigma is the brief intervention, which is typically delivered in person to students or professionals in medicine or mental health. Brief interventions include *social contact*, in which people are introduced to someone who discusses their history of mental illness and its personal impact, with the aim of challenging negative stereotypes. Other types of brief interventions include the psychosis simulation (i.e., audio recording or virtual reality simulations of psychotic hallucinations), education (i.e., seminar or lecture on mental illness and stigma), and social protest (i.e., an organized event or lecture focused on shaming stigma).

Social contact programs. Of the various brief interventions, social contact interventions have the most solid theoretical support (Corrigan et al., 2012). Social contact approaches are supported by theories of social stigma dating back to Allport's contact hypothesis (1954), which proposed that, "close and pleasant interpersonal contact with people from different groups is probably the best way to achieve social harmony" (Hogg & Abrams, 2007, p. 348). Social contact is also supported by Gaertner's recategorization theory (Gaertner, Mann, & Dovidio, 1990), which proposes that stigma persists, in part, because of the perceived otherness of the stigmatized group and suggests that decreasing perceived otherness and increasing perceived similarity reduces stigma. Two decades later, Link and colleagues extended these social contact theories to the field

of mental illness stigma with modified labeling theory (Link, Cullen, Struening, & Shrout, 2010). Modified labeling theory proposes that mental illness public stigma persists because stigma limits disclosures of mental illness and so precludes the public from learning from natural encounters with people with mental illness who do not conform to negative stereotypes. Research suggests that people withdraw from social contact and conceal mental illness when they believe that they are or will be stigmatized (Thornicroft et al., 2009). By extension, modified labeling theory suggests that stigma can be reduced by arranging for members of the public to have social learning encounters with people with mental illness who do not conform to negative stereotypes.

Social contact presentations vary in content and method. For example, social contact experiences vary in the extent to which they focus on the person's mental illness versus their achievements despite mental illness. Some presentations are provided live in person and others are provided by video (i.e., contact video). Live social contact is difficult to implement widely because it requires several individuals with serious mental illness from most communities to be willing and trained to effectively share their story with audiences (Stuart, 2006). Currently live contact programs are available in relatively few communities. The National Alliance on Mental Illness (NAMI) In Our Own Voice program is a no-cost presentation for community groups. A middle-aged adult living with chronic serious mental illness typically provides the presentation. In Our Own Voice reaches 45,000 U.S. audience members annually as it is only available to a few communities within some states (NAMI, 2016). The only known nationally available live contact intervention that targets young adults is the Active Minds Speakers Bureau program, which provides a relatively small number of contact presentations annually

because of the number of available speakers and program fees. A few local mental health nonprofit chapters around the country also provide social contact presentations yet these presentations are also limited. In comparison to live contact, contact videos offer a standardized experience for audience members and have the potential to reach more communities and a larger audience (Hackler, 2011).

Enhanced social contact. One strategy that has been proposed for increasing the effectiveness of social contact, including contact videos, is to incorporate more *facilitating factors* (i.e., factors that increase social contact effects). Several facilitating factors have been proposed based on theories of social contact (Allport, 1954; Pettigrew, 1998) and research on facilitating factors for social contact with marginalized social groups (Cook, 1985; Herek & Capitanio, 1996; Levin, van Laar, & Sidanius, 2003). Corrigan and Lundin have stressed the importance of central messages of "I work, live, and play, just like you" and "people with mental illness are capable and can accomplish life goals…with appropriate support" (Corrigan & Lundin, 2014, p. 57). These messages stereotype disconfirmation, Other proposed facilitating factors relate to the context and content of the contact event: duration and intimacy of the encounter, perceived institutional support for the contact, disclosure about marginalized group membership, similar social status between the speaker and audience, broad picture of the speaker, and speaker interests and goals that are relatable to the audience or that suggest friendship potential (Corrigan, Roe, & Tsang, 2011; Corrigan et al., 2012; Evans-Lacko et al., 2012; Schulze, Richter-Werling, Matschinger, & Angermeyer, 2003).

A meta-analysis of social contact interventions targeting stigma toward mental illness, physical disability, race/ethnicity, and religion by Pettigrew and Tropp (2006)

found that contact that adhered to four specific facilitating factors (i.e., equal audience-speaker status, common audience-speaker goals, audience-speaker cooperation, and institutional support for the contact) had a higher mean effect on attitudes than other interventions. Furthermore, they concluded that facilitating factors were important but not necessary for positive contact effects. Research on mental illness stigma has also examined facilitating factors. Findings from empirical studies of facilitating factors for mental illness contact suggest that mean effect sizes on attitudes and behavioral intentions are significantly greater for more intimate contact settings (Corrigan et al., 2012). In addition, Reinke and colleagues (2004) found evidence that videotapes of people who moderately and highly disconfirm the stereotype lead to significant improvement in attitudes, with non-significant trends suggesting that moderate disconfirmation yields better effects. There is also some evidence that effect sizes are larger when the encounter, through content or speaker choice, is structured to enhance the audience's sense of knowing the speaker and perceived similarity to the speaker in status and goals (Evans-Lacko et al., 2012). There is also some evidence that self-disclosure may facilitate greater contact effects by increasing intimacy and perceived friendship potential (Turner, Hewstone, & Voci 2007).

Psychosis simulation. A second type of brief intervention for public stigma is the psychosis simulation. Simulated experiences of illness are relatively new to the mental health field yet have been used for decades to reduce stigma towards people with physical disabilities and to teach medical doctors interpersonal clinical skills (French, 1992; Gaba et al., 1998; Grantcharov et al., 2004). How psychosis simulation impacts stigma towards people with serious mental illness remains unclear, however. Some developers and

researchers of psychosis simulations have reasoned that they work by offering an insider's perspective on psychosis and by encouraging empathy and understanding of the illness and how it could impact behavior (Brown, 2008b; Dearing & Steadman, 2009). Studies have consistently reported a significant positive relation between empathy and positive attitudes towards stigmatized groups coping with illness (Batson, Chang, Orr, & Rowland, 2002; Hodgson, 2006), and empathy may partially mediate the relation between perspective-taking and decreased prejudice (Mann, 2010). Scholars have further theorized that psychosis simulation elicits participant awareness of their ignorance of the illness and likely triggers feelings of guilt or shame and inhibition of stereotyped responses in favor of more accurate, thoughtful responses (Kalyanaraman, Penn, Ivory, & Judge, 2010). There is also one study (Brown, 2008a) that indicates psychosis simulation can lead to significant short-term increases in negative affect (medium effect sizes) and decreases in positive affect (positive effect sizes), yet it is unknown if and how these changes impact simulation's effects on stigma. More research is needed on the theory and mechanisms behind psychosis simulation intervention.

Psychosis simulations vary in the type of simulation offered and whether there is a post-simulation group discussion. A recent review study (Ando, Clement, Barley, & Thornicroft, 2011) suggests that the most popular form of psychosis simulation, at least in the research setting, is the audio hallucinations simulation and the most frequently used recording is from the *Hearing Voices that are Distressing: A Training and Simulated Experience* workshop (i.e., HVD workshop) by the National Empowerment Center (Deegan, 1996). For an audio hallucinations simulation, participants listen to a recording of a mix of benign, derogatory, and/or paranoid-sounding voices via headphones or

speakers with either full attention or with divided attention. In some interventions, such as the HVD workshop, the audience listens to the recording while completing pre-assigned tasks. Sample of the HVD and other audio hallucinations simulations are freely available on the Internet through media-sharing sites. Visual and virtual reality simulations are also available in various formats ranging from virtual-reality theater (e.g., Banks et al., 2004; Tabar, 2007), to the personal computer (Tichon & Banks, 2006) and Internet (Yellowlees & Cook, 2006). Mindstorm by Janssen, L.P., for example, requires viewers to experience simulated audio, visual, tactile, and olfactory hallucinations in a virtual-reality theater with headphones and polarized goggles (Tabar, 2007). These alternative type simulations have not been broadly disseminated given higher equipment and user costs (Tabar, 2007).

Contact plus psychosis simulation intervention. In addition to the single component brief interventions for public stigma of mental illness described above, there is a multi-component publicly available program, *Hearing Voices that are Distressing: A Training and Simulated Experience* (HVD workshop; Deegan, 1996). This workshop was developed two decades ago for a broad audience of professionals and has been piloted with psychiatric nurses, psychiatrists, social workers, psychologists, direct care workers, mental health administrators, policy makers, police officers, and academic faculty. The curriculum includes a training manual for facilitators who lead the workshop. Participants watch a 60-minute social contact video featuring a middle-aged adult psychologist discussing her recovery from schizophrenia and the nature of the disorder. Participants then complete a 45-minute audio hallucinations simulation exercise and participate in a 20-minute group discussion about the intervention experience. While listening to the

recorded simulation, participants are instructed to complete tasks (i.e., taking a mental status exam in a mock psychiatric emergency room, cognitive testing, social groups, going into the community and performing a task) at staff-manned workstations to provide insight into the firsthand experience of people with mental illness who face negative attitudes and reactions from others.

To summarize, brief interventions for public stigma of mental illness include social contact and psychosis simulation. Public access to live social contact interventions is limited, however, which has led to the development of contact video alternatives. The psychosis simulation is another accessible intervention developed to facilitate understanding of schizophrenia under the assumption that improving understanding improves attitudes. The HVD workshop is a publicly available program that includes both a contact video and audio hallucinations simulation intervention components.

Evidence for Social Contact Effects

The state of social contact research. Social contact intervention effects on mental illness public stigma have been examined across three decades in more than 72 studies from 14 countries. Results have been summarized in three review articles (Corrigan et al., 2012; Mehta et al., 2015; Yamaguchi et al., 2013). The meta-analytic review by Corrigan and colleagues (2012) included the largest number of contact studies (60 studies including 13 randomized control trials or RCTs) with many focused on immediate effects in samples of health care professionals and students. A systematic review by Yamaguchi and colleagues (2013) focused exclusively on studies of brief stigma interventions in college student samples (12 RCTs and 7 controlled pre-post studies of contact). Most of the included studies examined immediate effects and many

study samples contained students from psychology, health care, special education, or the law. The third article by Mehta and colleagues (2015) reviewed the limited literature on longer-term effects of interventions for mental health-related stigma and discrimination.

Based on these review articles and a subsequent literature review, it appears that many studies measured stigma broadly (e.g., overall stigmatizing attitudes) rather than by specific aspect (e.g., belief in forced treatment). Previous studies also varied in whether they measured bias toward people with psychotic symptoms or psychiatric labels (mental illness or schizophrenia), and there is more evidence that social contact is associated with a significant reduction in stigma toward people with mental illness versus schizophrenia (Griffiths, Carron-Arthur, Parsons, & Reid, 2014). Studies also varied in the types of contact examined (i.e., video or live) and used various videos. The HVD workshop video (Deegan, 1996) is commonly used in the community, but no study has examined the quantitative effects of the HVD video or created a video that intentionally attends to multiple contact facilitating factors (i.e., enhanced video).

Immediate effects of contact video interventions. Two reviews (Corrigan et al., 2012; Yamaguchi et al., 2013) reported that social contact generally leads to immediate reductions in general negative attitudes towards people with schizophrenia. The first review was a large-scale meta-analysis (Corrigan et al., 2012) that concluded that social contact is generally more effective than education in immediately reducing negative attitudes for young adults. Combining live and contact video effects from RCTs, Corrigan and colleagues reported a greater decrease in negative attitudes for social contact versus education, with moderate and small effects for social contact and education, respectively. In the second review, Yamaguchi and colleagues (2013) concluded that social contact is

generally effective in immediately reducing negative attitudes among college students and generally more effective than education. Yamaguchi and colleagues intentionally did not estimate a mean effect size, citing too much heterogeneity between study designs and interventions.

The reviews by Corrigan and colleagues (2012) and Yamaguchi and colleagues (2013) also examined evidence from published studies of the effects of mental illness contact videos (Brown, Evans, Espenschade, & O'Connor, 2010; Clement et al., 2012; Corrigan, Larson, Sells, Niessen, & Watson, 2007; Faigin & Stein, 2008; Hackler, 2011; Kerby et al., 2008; Penn, Chamberlin, & Mueser, 2003; Reinke et al., 2004). Corrigan and colleagues (2012) concluded that contact videos have the potential for a small immediate effect on attitudes and social distance. The review by Yamaguchi and colleagues (2013) focused on studies with college samples, including two robust RCTs (Clement et al., 2012; Reinke et al., 2004) and a controlled before-and-after study (Faigin & Stein, 2008). Both RCTs found evidence that contact videos have the potential for a small immediate effect on social distance. Clement and colleagues also found evidence that contact videos have the potential for a small immediate effect on attitudes but did not find any evidence that live and contact video differ in effect on social distance, attitudes, or emotional reactions. However, the controlled before-after study by Faigin and Stein (2008) reported a larger effect on attitudes and behavioral intentions for live contact versus contact video.

In examining the evidence for contact video effects on specific aspects of stigma toward people with serious mental illness, I found three contact studies on perceived dangerousness. All three studies relied upon undergraduate samples that were primarily

Caucasian. First, an RCT of contact video effects by Corrigan and colleagues (2007) did not find evidence for a significantly greater immediate decrease in perceived dangerousness for contact videos versus education yet perceived dangerousness decreased for study participants in general. Penn and colleagues (2003) also did not find evidence for a significantly greater reduction in perceived dangerousness for contact video versus control conditions. The strongest RCT evidence for a contact effect on perceived dangerousness comes from an RCT of live contact (Corrigan et al., 2002) that found a significantly greater immediate decrease in perceived dangerousness for live contact versus education and no-contact control conditions.

There is also a small literature on the immediate effect of contact videos on social distance and belief in forced treatment. Corrigan and colleagues (2012) reported that contact videos generally have an immediate small effect on social distance, based mainly on findings from a few RCTs with adults. Yamaguchi and colleagues (2013) reported that contact videos also appear to have an immediate small effect on social distance among college students (Brown et al., 2010; Clement et al., 2012; Corrigan et al., 2002; Corrigan et al., 2007; Reinke et al., 2004; Wood & Wahl, 2006). In comparison, there is only one known study of the effect of social contact on belief in forced treatment. In this randomized study of college student stigma, Corrigan and colleagues (2007) did not find a greater immediate reduction in belief in forced treatment in a contact video versus education condition or a decrease in belief in forced treatment in the contact condition.

Similarly, few studies have examined the immediate effect of a contact video on negative emotions. Brown and colleagues (2010) examined the impact of a contact video on a measure of diverse negative emotions, including anger and nine other emotions, in

an undergraduate sample. They found a significant immediate decrease in general negative emotions in college students in the contact video condition (large effect) and a significantly greater decrease in negative emotions in the contact video condition than in the control condition. In comparison, Corrigan et al. (2007) did not find a significant immediate reduction in anger/irritation in college students after watching a contact video. Clement and colleagues (2012) also did not find evidence from their RCT with a nursing student sample that a contact video leads to a significant immediate decrease in anger or a greater decrease in anger than education control. In another relevant randomized study, Corrigan and colleagues (2002) found that a live contact intervention that directly addressed blame for illness was associated with a significantly greater decrease in negative emotions compared to education or inactive control conditions that did not address blame.

Longer-term effects of contact video interventions. In examining the evidence for sustained contact effects on specific attitudes and behavioral intentions, all three systematic reviews highlighted the limited number of social contact studies that have examined longer-term effects. Mehta and colleagues (2015) reviewed the small literature on effectiveness studies of brief interventions for mental illness stigma with follow-ups of one month or longer, hereafter referred to as longer-term effects. The authors concluded that brief interventions have the potential for small longer-term effects on negative attitudes but did not find evidence that social contact has larger longer-term effects than other brief interventions, such as internet-based or in-person education. They did not specifically examine whether contact videos have longer-term effects, as there were too few studies.

Among these longer-term contact video studies is Clement and colleagues' (2012) RCT of stigma in student nurses. They found a greater decrease in social distance for video/live contact versus education after four months but no apparent difference in effect between video and live contact. In contrast, Faigin and Stein's (2008) controlled before-and-after study did not find a greater one-month reduction in social distance in college students for a contact video (of a stigma play featuring people with mental illness) versus an inactive control condition. Given this small body of longer-term literature on social distance, I also examined evidence from one-week follow-up studies. A RCT by Corrigan and colleagues (2007) found a larger one-week reduction in social avoidance in college students for a contact video versus education control. A subsequent RCT by Hackler (2011) found reduced social distance in college students one week after a mental illness contact video. However, the decrease in social distance was not greater for the mental illness contact video versus a cancer survivor contact video.

To my knowledge there have been almost no studies of other longer-term effects of contact videos. An RCT by Clement and colleagues (2012) did not find evidence that contact videos lead to a greater decrease in anger versus educational control in nursing students after four months. I did not find any published studies of longer-term effects on perceived dangerousness or belief in forced treatment in my review. However, a one-week follow-up study by Corrigan and colleagues (2007) did not find evidence that a contact video reduces perceived dangerousness or belief in forced treatment more than education.

Evidence for Psychosis Simulation Effects

Simulation effects. Ando and colleagues (2011) published a meta-analysis of

psychosis simulation studies, which included eight quantitative studies and two qualitative studies of college students. Most of the studies only examined immediate effects and most used part of the psychosis simulation recording from the HVD workshop (Deegan, 1996). The simulation interventions in these studies varied in length from 4.5 to 40 minutes and some but not all studies asked participants to complete an exercise while listening to the recording. Only Brown and colleagues (2010) reported on whether any participants discontinued the simulation exercise, and no participants stopped early or reported distress in their study.

Ando and colleagues (2011) concluded that simulations generally increase empathy toward people with schizophrenia. They also reported that simulations may have a negative effect on social distance from people with schizophrenia, at least immediately, based on findings from two randomized studies (Brown et al., 2010, Kalyanaraman et al., 2010) and one pre-post study (Brown, 2010). The RCT by Kalyanaraman and colleagues (2010) examined change in social distance in undergraduates across four conditions (4.5-minute virtual reality auditory and visual psychosis simulation, empathy-induction exercise, virtual reality simulation plus empathy-induction, inactive control). For the empathy-induction exercise, participants were asked to imagine collecting a pharmacy prescription while experiencing hallucinations and to privately journal their reactions. Kalyanaraman and colleagues found a greater immediate increase in social distance in the simulation-only condition versus the control condition (large effect). In another study with undergraduate students, Brown and colleagues (2010) also found a significant immediate increase in social distance following an audio hallucinations simulation (large effect) that was still significant after one week (small effect). In a separate study, Brown

(2010) found a significant decrease in willingness to socially interact or help a person with schizophrenia in both audio hallucinations simulation conditions (both small effects), regardless of whether participants completed tasks during the simulation. In considering potential reasons for this pattern of increase in social distance following simulation, Ando and colleagues (2011) speculated that simulation might increase the perceived strangeness of the disorder by focusing on a surprising and severe symptom and might also reinforce the stereotype that people with serious mental illness are unable to control their behavior.

To my knowledge, only four studies have examined the effect of simulation on perceived dangerousness, belief in forced treatment, or negative emotions toward people with serious mental illness. Brown (2010) did not find a significant immediate change in perceived dangerousness or anger/irritation following an audio hallucinations simulation, regardless of whether participants completed tasks during the simulation. In contrast, Brown (2010) did find a significant immediate increase in belief in forced treatment in both audio hallucinations simulation conditions (both small effects). Furthermore, an RCT by Brown and colleagues (2010) examined the impact of an audio hallucinations simulation on a measure of diverse negative emotions in an undergraduate student sample. Participants were randomly assigned to simulation, contact video, or inactive control (no intervention) and completed stigma measures immediately before and after the intervention and one week later. Negative emotions initially increased (medium effect) but were significantly reduced from baseline one week after the simulation (small effect). The mixed findings from studies of the effect of simulation on negative emotions are more challenging to interpret because one study used a measure of anger/irritation

and another used an instrument that measures diverse negative emotions. Overall, the results from these studies of simulation effects on stigma toward people with serious mental illness suggest that simulations may improve some aspects of stigma while harming other aspects.

Evidence for Multi-Component Intervention Effects.

Multi-component intervention effects. In response to the apparently mixed positive and negative simulation effects (e.g., empathy versus social distance) and to mixed findings on brief intervention effects on specific aspects of stigma more generally, some researchers (e.g., Kalyanaraman et al., 2010; Penn et al., 2003) have recommended examining the effects of multi-component brief stigma interventions. To my knowledge there has not yet been a quantitative study of the multi-component HVD workshop (Deegan, 1996), which is comprised of a contact video and audio hallucinations psychosis simulation. However, Wilson and colleagues (2009) examined the self-reported impact of this workshop on twenty-seven nursing students. Thematic content analysis of participant responses to open ended prompts after the workshop identified themes of greater "awareness" of the experience of symptoms, "transformation through empathy," "inspiration to help," and general "reduced stigma." To my knowledge there are two additional published studies of multi-component interventions for mental illness stigma. In the first study, Chan and colleagues (2009) examined the effects of a 15-minute contact video plus 30-minute educational lecture intervention on college students in China. Chan and colleagues found a significantly greater immediate reduction in general negative attitudes in the education plus contact video condition compared to the education-only condition. They also reported a significantly greater reduction in social

distance in the education plus contact video condition compared to the education-only condition, both immediately and after one month. Administration of components in the reverse order (i.e., contact video followed by education) did not lead to a greater reduction in negative attitudes or social distance in the education plus contact video condition compared to the education-only condition. In the other multi-component study, Kalyanaraman and colleagues (2010) tested the effects of a virtual reality psychosis simulation paired with and without an empathy-induction exercise. Social distance significantly increased in the simulation condition but not in the simulation plus empathy-induction condition. General stigmatizing attitudes decreased significantly more in the simulation plus empathy-induction condition compared to the simulation-only condition.

Summary and Limitations of the Research on Contact and Simulations

In summary, the literature on brief interventions for mental illness public stigma is nascent. Social contact interventions, including video contact interventions, appear to be the most promising brief intervention for improving attitudes and social distance toward people with serious mental illness in both college and general adult populations. More research is needed on the effects of contact videos on specific aspects of stigma, including longer-term effects, although there is some evidence that video contact has the potential for immediate and possibly longer-term reductions in social distance. There is also some evidence that live contact can lead to significant immediate reductions in perceived dangerousness and anger/irritation, although it is still unclear whether video contact can lead to significant decreases in these aspects of stigma. Research on the effect of contact videos on belief in forced treatment is too limited to draw conclusions. Furthermore, little is known about the effects of multi-component contact video

interventions on mental illness stigma or the extent to which contact videos enhanced with facilitating factors outperform standard contact videos.

In comparison, the literature on psychosis simulations suggests that these interventions generally immediately increase both empathy and social distance. However, there is scant evidence from which to draw conclusions about simulation's longer-term effects on social distance or immediate or longer-term effects on belief in forced treatment, negative emotions, or perceived dangerousness. Additionally, although simulations have been paired with other brief interventions in the community, little research has been done on these interventions, including on the effects of simulation paired with other brief interventions.

The Current Study

The current study was intended to advance knowledge of the effects of social contact videos and psychosis simulations on negative attitudes and emotions toward people with schizophrenia among college-aged individuals. A main goal was to measure and compare the effects of a standard contact video (standard video) and a novel contact video (enhanced video) that incorporated more facilitating factors for social contact. Another primary goal was to understand how pairing these contact videos with an audio hallucinations simulation impacts effects. Participants were randomly assigned to a video (control video, standard video, enhanced video) and audio recording (control audio, simulation) (see Table 1). The study was conducted in a naturalistic campus setting and perceived dangerousness, social distance, belief in forced treatment, and negative emotions were the outcomes of interest. Data were collected immediately before the intervention (T1), immediately afterwards (T2), and three weeks later (T3).

Table 1.
Factor Pairs

	Video		
Audio	Enhanced contact	Standard contact	Control
Control	Condition 1	Condition 2	Condition 3
Simulation	Condition 4	Condition 5	Condition 6

The primary focus of the study was on stigma change between T1 and T2 (immediate effects). I also examined the amount of stigma change between T1 and T3 (longer-term effects). Thus, testing the study's hypotheses required two sets of analyses for each dependent measure, yielding a total of eight 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVAs. The repeated measures factor was time (either T1 minus T2 or T1 minus T3) and the between-groups factors were audio and video.

Study Aims and Hypotheses

Aim 1. Contact Video Effects. The first aim was to determine whether exposure to the contact videos results in a decrease in perceived dangerousness, social distance, belief in forced treatment, and negative emotions toward people with schizophrenia, and also whether exposure to the contact video with more facilitating factors (enhanced video) results in greater decreases in negative attitudes and emotions than exposure to the HVD contact video (standard video). For all outcomes, unless contact videos were paired with simulation (see Aim 2), I hypothesized that the enhanced video would have significantly greater effects than the standard video and control video, and that the standard video would have significantly greater effects than the control video.

Aim 2. Contact Video Plus Simulation Effects. The second aim was to determine the effect of pairing the contact videos with simulation on perceived dangerousness, social distance, belief in forced treatment, and negative emotions. I hypothesized that the

decrease in perceived dangerousness, social distance, belief in forced treatment, and negative emotions would be greater for those exposed to the contact videos than those exposed to the control video unless the contact video was paired with the simulation.

Method

Participants

Participants eligible for the study were University of Maryland, Baltimore County (UMBC) undergraduates between 18 and 30 years old. The experimenter screened interested students based on exclusionary criteria. Participants were eligible if they were enrolled in a psychology course and did not have a history of hearing voices or significant hearing or vision problems, which can reasonably be assumed to alter the intervention's impact.

Sampling

Selection procedures, compensation, & study setting. One hundred and seventy participants were recruited through the UMBC student research pool from August 2014 to December 2015. The study was advertised on the university's research subject webpage, run by the Department of Psychology, which connects UMBC researchers with a pool of possible volunteer participants from diverse academic majors. Study participants were compensated for their time with extra credit provided by a course instructor. The experiment was primarily conducted in the experimenters' lab on the UMBC campus with participants making a brief excursion across surrounding grounds and into another campus facility.

Ethical considerations. Informed consent was obtained from all participants. Participants were told that the study examined their attitudes towards various social

groups and about health issues. Participants assigned to the simulation were informed that they would be asked to listen to a recording that simulates auditory hallucinations, a common symptom of psychosis and schizophrenia. As precautionary measures, participants were reminded that they could skip or stop the simulation if they became uncomfortable or distressed and that they should not participate in the simulation exercise if they have a history of hearing voices. All participants assigned to the simulation exercise completed the exercise and no participants reported suspending the recording or negative effects.

Stimulus Materials

Description of intervention videos. Participants were randomly assigned to one of three videos (control, standard, enhanced). The standard contact video (standard video) was 25-minutes of the HVD workshop contact video, *Understanding the Person Who Hears Distressing Voices* (Deegan, 2004). In this video, Dr. Patricia Deegan discusses her personal experience of living with and recovering from schizophrenia, including personally effective coping strategies and effective treatments. Dr. Deegan is the only person featured in the video and the video can be considered to be high in stereotype disconfirmation. Deegan conveys that she has a doctorate and has been successful in her career and life goals and has fully recovered from schizophrenia. However, she also indicates that she struggled in the past with recovery and needed professional and social support in managing her mental health and life goals.

The enhanced contact video (enhanced video) was *Breaking Taboo* (2013), a 25-minute video that was directed by Eryn Bentley and me and produced by Jason Schiffman. This video was filmed on the UMBC campus, although specific visual

references to UMBC, such as signage, were edited out when possible. The investigator created this film as an alternative to standard contact videos with the goal of including more facilitating factors and targeting the video to the college student population. The main part of the video contains three college students sharing their personal stories of recovery from mental illness, more specifically from schizophrenia or bipolar disorder with psychotic features. The video was judged by the authors to be moderately high in stereotype disconfirmation as the speakers do not have severe psychological concerns at present and convey that they are socially and academically successful despite some past periods of difficulty and some manageable struggles with mental health. As such their personal stories convey the themes of "people with mental illness are capable and can accomplish life goals…with appropriate support" and "I work, live, and play, just like you." The speakers also briefly address the mental illness myths of dangerousness and personal responsibility for developing mental illness and discuss how they have been personally impacted by stigma. The second part of the video shows a sequence of thematically grouped clips of interviews with eight young adult consumers, who are diverse in race, gender, and collegiate social and academic interests. Themes include the myths and stereotypes of mental illness and treatment, stigma of treatment and disclosure of mental illness, how friends help with recovery, benefits from psychiatric services, and the need for peers and communities to foster an open and supportive dialogue about mental illness. The speakers throughout the video have a similar social status to their college student audience and are portrayed as having relatable social and academic goals and a range of youthful interests that might show friendship potential.

The control video was a 25-minute segment of the "Mountains" episode of *Planet Earth*. *Planet Earth* is a 2006 television series produced by the BBC Natural History Unit that features Earth's various biomes. The clip features aerial photography and discussion of the mountain ranges of the world and the species that inhibit them.

Description of audio recordings and exercise. The psychosis simulation was a 25-minute excerpt of an audio hallucinations simulation from the HVD workshop (Deegan, 2004). The recording includes a mix of benign sounds, intrusive words or phrases, and negative comments directed toward the listener. The control audio file was a 25-minute excerpt from Wolfgang Amadeus Mozart's Symphony No. 40 in G minor (1788) that included a minuet and fast movement.

Participants were provided a personal MP3 player loaded with the audio file and headphones. They were also provided materials for two tasks they were instructed to complete while listening to the recording. These tasks were selected to facilitate participant understanding of the challenges of hearing voices while managing young adult activities and responsibilities. For the first task participants were provided a brief article on classroom education and a related 7-item multiple-choice quiz. For their second task participants were provided instructions for their walk across campus to ask a library staff member a library related question. Materials can be found in Appendix A (Workshop Quiz) and Appendix B **(**Workshop Library Task).

Quantitative Measures

Attribution Questionnaire-27 (AQ-27; Corrigan et al., 2003). The AQ-27 (Appendix C) measures self-reported explicit negative attitudes, beliefs, and emotional reactions to people with schizophrenia. The measure consists of a brief vignette about a

30-year-old man with schizophrenia (Harry) and participants rate their beliefs and reactions to Harry on 27 items on 9-point Likert scales. Higher scores represent greater stigma. The subscales of dangerousness (three items), forced treatment (four items), and negative emotions (three items) were used for this study. Total possible scores range from 3 to 27 for the dangerousness and negative emotions subscales and from 4 to 36 for the forced treatment subscale. The forced treatment subscale includes items endorsing forced institutionalization, group home living, and coercive treatment. The negative emotions scale measures reactions of anger and irritation. The AQ-27 was normed on a sample of over 200 community college students and has been demonstrated to be sensitive to changes in stigma following anti-stigma interventions with diverse samples (Brown, 2008b; Sousa et al., 2012). For the present study, Cronbach's alpha ranged from .72 to .90 at T1 and test-retest reliability for these subscales for the study sample ranged from .82 to .89 for T1/T2 and from .71 to .84 for T1/T3.

Social Distance Scale (SDS; Link et al., 1987; Penn et al., 1994). Social distance from people with schizophrenia was assessed with the SDS (Appendix D). Participants rated their willingness to include or interact with people with schizophrenia in daily life on seven items on 4-point Likert scales with anchors from 0 (*definitely willing*) to 3 (*definitely unwilling*). Possible scores range from 0 to 21, with higher scores representing greater social distance. For the present study, Cronbach's alpha was .88 for T1 and test-retest reliability was .86 for T1/T2 and .66 for T1/T3. In a previous study, the overall score demonstrated significant sensitivity to change following stigma intervention in a large college student sample (Corrigan et al., 2002).

Demographics. Data on gender, age, race/ethnicity, years of education, academic major, and history or family history of mental health services were gathered in a background questionnaire (Appendix E).

Knowledge About Schizophrenia Test (KAST; Compton, Quintero, & Esterberg, 2007). The KAST (Appendix F) is a multiple-choice test of knowledge about schizophrenia including understanding of causes, symptoms, and treatment. A 13-item total score was calculated as the number of correct items ranging from 0 (*no knowledge*) to 13 (*high knowledge*).

Level of Contact Report (LOC; Holmes, Corrigan, Williams, Canar, & Kubiak; 1999). The LOC (Appendix G) measures self-reported level of contact or exposure to people with mental illness. The instrument contains 11 items and 10 types of interactions with people who have mental illness which vary in the degree of intimacy involved. Situations are rank ordered from one to 11 by level of intimacy and participants are asked to endorse each situation they have ever experienced. Rankings were developed based on expert consensus ranking of items. Scores represent the rank score of the most intimate situation from 1 (*no exposure*) to 11 (*high exposure*). For this study, the phrase mental illness was replaced with psychosis, which was defined in the instructions as "a common symptom of schizophrenia, schizoaffective disorder, and bipolar disorder. It is a temporary mental state often characterized by hallucinations and confused thinking about what is real versus imagined."

Procedure

Interested students volunteered for this study via a website that hosts the UMBC research participant pool and lists the brief study description and eligibility criteria.

Students selected the pre-determined workshop date they could attend. On the day of the experiment, participants were provided informed consent including a brief description of the aim of the experiment ("to assess perceptions of various groups and health issues") and were subsequently randomly assigned to an audio and video recording[1]. Subjects participated in the intervention with up to ten other participants (*Median* = 4).

Following random assignment, participants completed a battery of self-report measures in balanced Latin square format. This T1 battery included the demographics form, stigma measures (AQ-27, SDS), KAST, and LOC. Participants then viewed their assigned video on a personal computer with earphones. This ordering mirrors the order of the contact video and simulation components in the HVD workshop (Deegan, 2004).

Next, staff distributed MP3 players to all participants and provided initial instructions on the audio exercise. Staff instructed participants that while listening to the recording they would have five minutes to read an article and answer related questions, and that afterwards, they should walk to the library and ask an employee at the circulation or reference desk a library related question. They were instructed not to interact with other participants during the exercise and to return to their seat after completing their tasks. Staff also instructed participants to listen to the audio file at a standardized pre-set volume throughout the exercise. To account for hearing differences and ensure safety, participants started the recording and confirmed that they could simultaneously clearly hear the recording and researcher. Once everyone was seated and ready to begin the tasks, staff provided the article and collected the quizzes after five minutes. To encourage independent task completion, participants were excused to the library at one-minute

[1]The first 15 participants completed the intervention in groups, with groups randomly assigned to an audio/video pair. There were no significant differences in mean group size among audio/video conditions.

intervals. As participants returned from the library, they were asked to re-complete the AQ-27 and SDS (T2 battery).

A staff member individually checked out with each participant to address any participant questions or concerns and to promote completion of surveys. No participants expressed any negative reactions to participation. The intervention ran for 90 minutes on average. All participants received emailed invitations to complete a three-week (T3) follow-up assessment that involved re-completing the AQ-27 and SDS (T3 battery).

Results

Preliminary Analyses

Descriptive Statistics. Table 2 displays sample characteristics collected at T1 for the 170 participants. More than half of participants identified as either African American or Asian American. There was a higher ratio of women to men. Ages ranged from 18 to 30 years old (M = 21.4, SD = 2.8).

Table 2
Participant Characteristics (N =170)

Characteristic	Participants *n*	(%)	*M (SD)*
Age			21.4 (2.8)
Gender			
Women	129	75.9	
Men	41	24.1	
Race			
Caucasian	77	45.3	
African-American	39	22.9	
Asian-American	45	26.5	
Other	9	5.3	
Ethnicity			
Hispanic	15	8.8	
Non-Hispanic	155	91.2	
Years of Education			14.6 (1.2)
Educational Discipline			
Psychology/Social Work/Nursing/Medicine	102	60.0	
Other Sciences and Disciplines	68	40.0	
Mental Health Service Use			
Past or Present Consumer	68	40.0	
Never Received Services	102	60.0	
Exposure to Mental Illness*			
Personally Experienced Psychosis	1	0.6	
Relative/Friend Experienced Psychosis	23	13.5	
Roommate with Serious Mental Illness	3	1.8	

*Categories are not mutually exclusive

Prior to the main analyses, preliminary analyses were conducted to detect any significant T1 differences among participants assigned to the six factor pairings (*n*s ranged from 25 to 31). No significant differences were found across factor pairings in terms of race (White/Black/Asian), gender, mental health service use, or academic major (Health/All other) per chi-square analyses or significant differences in exposure to serious mental illness per a Kruskal-Wallis H test. Differences at T1 were tested with a series of 2 (Audio) x 3 (Video) ANOVAs for age, years of education, workshop group size, knowledge of schizophrenia, and AQ-27 and SDS stigma variables. Consistent with

random assignment to condition, no T1 differences were observed for any of these variables.

Attrition. Of the 170 T1 participants, 100% provided data at T2 and 49.4% (n = 84) provided data at T3. The proportions of follow-up participants were similar for those receiving the six factor pairings. To investigate whether attrition occurred sufficiently at random, participants who did and did not complete T3 were compared in terms of T1 scores on the AQ-27, SDS, LOC, and KAST and on years of education, race, ethnicity, gender, consumer status, academic major, and workshop format. T3 participants were significantly younger than non-completers but did not significantly differ from non-completers on other variables. Taken together, these data do not suggest a relation between attrition and relevant factors measured within the dataset. Therefore, follow-up data was likely missing completely at random and listwise deletion was used for the relevant longer-term analyses.

Missing Data. There was little missing data within cases at each time point, meaning that once participants started the battery they were likely to complete all measures. Specifically, 99.4% of T1 participants had complete T1 data, 97.1% of T2 participants had complete T2 data, and 96.4% of T3 participants had complete T3 data. Four participants did not complete any items on the T2 AQ-27 dangerousness subscale and two did not complete the T3 dangerousness subscale. The small number of non-completers did not warrant a statistical test comparing those who completed all measures versus those who did not, and visual inspection did not indicate any discrepancies in variable means for those who completed all measures versus those who did not. When T2 or T3 measures were not completed, the case was excluded from the relevant analysis.

Given the requirements of valid data at all time waves in a Mixed Design ANOVA and that systematic replacement of missing values is required for an intention to treat approach (Polit & Gillepsie, 2010), for the rest of the missing item data I substituted the mean participant score for the item from that time point. Mean substitution is a conservative estimate and advantageous because the distribution mean does not change and there is no guessing about missing values (Tabachnick & Fidell, 2007).

Inter-correlations. Table 3 displays the correlation matrix for the outcome variables at each time point. Correlation between measures was high at T1 (Pearson r = .25 to .54), T2 (Pearson's r = .32 to .60), and T3 (Pearson's r = .36 to .65).

Table 3
Correlations for Dependent Variables

	Time 1				Time 2				Time 3			
Variable:	1	2	3	4	5	6	7	8	9	10	11	12
1. T1 Dangerousness	1											
2. T1 Forced Treatment	.53**	1										
3. T1 Negative Emotions	.40**	.54**	1									
4. T1 Social Distance	.46**	.37**	.25*	1								
5. T2 Dangerousness	.71**	.33**	.31**	.37**	1							
6. T2 Forced Treatment	.25*	.64**	.36**	.30**	.36**	1						
7. T2 Negative Emotions	.51**	.44**	.65**	.20	.60**	.33**	1					
8. T2 Social Distance	.39**	.33**	.19	.74**	.43**	.47**	.32**	1				
9. T3 Dangerousness	.62**	.34**	.21	.39**	.74**	.34**	.41**	.42**	1			
10. T3 Forced Treatment	.31**	.68**	.45**	.38**	.41**	.78**	.38**	.43**	.41**	1		
11. T3 Negative Emotions	.59**	.44**	.60**	.39**	.56**	.26*	.70**	.38**	.65**	.44**	1	
12. T3 Social Distance	.46**	.30**	.23*	.49**	.42**	.30**	.36**	.54**	.36**	.44**	.38**	1

*$p < .05$, **$p < .01$
Note: T1 = Time 1, T2 = Time 2, T3 = Time 3. Sample sizes for each pairwise correlation within the dataset ranged from $N = 166$ to 170 for T1 and T2 and $N = 82$ to 84 for T3. Dangerousness, Forced Treatment, and Negative Emotions = Attribution Questionnaire-27 scales. Negative Emotions data was log transformed. Social Distance = Social Distance Scale.

Table 4 displays descriptive statistics for the outcome variables at the three time points. All analyses appropriately abided by their assumptions. Prior to analyses dependent variables were tested for violations of normality using visual plot inspection and the Shapiro-Wilk Test. Log transformations were applied to the negative emotions variable at each wave. Results provided no reason to believe any other variable violated

assumptions of normality (Curran, West, & Finch, 1996). Furthermore, Levene's and Box's M test estimates were non-significant for each dependent variable ($p > .05$). Mauchly's W Test did not indicate violations of sphericity ($p > .05$) for variables other than social distance, for which the Huynh-Feldt correction was applied.

Table 4
Descriptive Statistics for Dependent Variables

			Range			
Variable	*M*	*SD*	Potential	Actual	Skew	Kurtosis
T1						
Dangerousness	11.89	5.61	3 – 27	3 – 27	0.37	-0.57
Forced Treatment	12.81	5.74	4 – 36	4 – 32	0.47	0.00
Negative Emotions	9.02	4.93	3 – 27	3 – 23	-0.20*	-1.15*
Social Distance	12.00	4.52	0 – 21	2 – 21	0.06	-0.80
T2						
Dangerousness	9.18	5.60	3 – 27	3 – 27	0.81	-0.05
Forced Treatment	12.34	6.02	4 – 36	4 – 32	0.67	0.25
Negative Emotions	7.14	4.63	3 – 27	3 – 21	0.37*	-1.09*
Social Distance	10.35	4.88	0 – 21	0 – 21	0.26	-0.52
T3						
Dangerousness	9.99	5.29	3 – 27	3 – 24	0.54	-0.55
Forced Treatment	11.95	5.07	4 – 36	4 – 25	0.38	-0.20
Negative Emotions	7.54	4.94	3 – 27	3 – 20	0.31*	-1.17*
Social Distance	10.46	4.73	0 – 21	0 – 20	0.10	-0.57

T1 $N = 170$ for all outcomes. T2 $N = 170$ for Social Distance, Forced Treatment, and Negative Emotions. T2 $N = 166$ for Dangerousness. T3 $N = 84$ for Social Distance, Forced Treatment, and Negative Emotions. T3 $N = 82$ for Dangerousness. Dangerousness, Forced Treatment, and Negative Emotions are Attribution Questionnaire-27 subscales; Social Distance = Social Distance Scale. *Values represent transformed data.

Analytic plan

The same strategy was used to test the following for each dependent measure: (1) The effects of the contact videos are greater than the effects of the control video but only in the absence of simulation, and (2) In the absence of simulation, video effects increase from the control to standard to enhanced video. For each dependent measure, there were two sets of analyses: immediate effects (primary analyses) and longer-term effects

(secondary analyses) for a total of eight 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVAs. For each ANOVA, I first examined whether a three-way interaction was present as this impacts the interpretation of video and audio effects. When interactions were present, simple effects analyses were conducted following guidelines provided by Keppel (1991). If there was a three-way interaction, I probed simple simple effects to understand the impact of the videos as function of audio. In the absence of a three-way interaction, two-way interactions were probed. For a Time x Video interaction, I examined the simple effect of time (change) within each video condition, and for a Time x Audio interaction, I examined the simple effect of time within each audio condition. For this study an effect was defined as significant if partial $\eta^2 \geq .02$ or if $p < .05$ for the F test; partial η^2 effects were defined by benchmarks of small (.02), moderate (.13), and large (.26). For all dependent variables, larger immediate pre-test minus post-test scores (T1 minus T2) and longer-term pre-test minus post-test scores (T1 minus T3) represent a greater decrease in stigma.

Primary Analyses by Dependent Variable

Immediate Change in Perceived Dangerousness. Table 5 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating immediate change in perceived dangerousness. As seen in Table 5, a significant three-way interaction effect was observed, suggesting that the effects of video condition on change in dangerousness varied as a function of audio condition. To understand this pattern more clearly, simple simple effects were estimated (see Table 6). All six simple simple effects met the established criteria for a significant pre-test minus post-test score. Figure 1 provides a clustered bar graph of mean pre-test minus post-test score illustrating

that change in perceived dangerousness was most pronounced for the two contact videos at the control audio level.

To test whether the amount of change in perceived dangerousness differed as a function of video condition, a series of simple effects tests comparing mean change between video conditions *within audio condition* was conducted. Considering the control audio condition, the decrease in perceived dangerousness was smaller in the control video condition than either the standard video or enhanced video conditions (see Table 6). Thus, when coupled with the audio control condition, decrease in perceived dangerousness was greater in both the standard and enhanced video conditions than in the control video condition; $F(1, 160) = 4.30$, $p = .04$, partial $\eta^2 = .03$ and $F(1, 160) = 5.62$, $p = .02$, partial $\eta^2 = .03$ for the respective comparison of standard or enhanced video condition versus control video condition. No apparent differences in change in perceived dangerousness were observed between the enhanced and standard video conditions, $F(1, 160) = 0.07$, $p = .80$, partial $\eta^2 = .00$. In contrast, within the simulation audio condition, the amount of change in perceived dangerousness did not differ as a function of video condition, $F(2, 160) = 0.06$, $p = .95$, partial $\eta^2 = .00$. Thus, the contact video conditions had moderate size effects on perceived dangerousness and outperformed the control video condition but only in the absence of the simulation. Stigma decreased for all video and audio level pairings.

Table 5.
Summary of the Three-Way Mixed Design ANOVA for Immediate Change in Perceived Dangerousness

Effect	*F* (*df*)	*p*	partial η^2
Time	74.37 (1, 160)	.00	.32
Video	1.77 (2, 160)	.17	.02
Audio	0.02 (1, 160)	.89	.00
Time x Video	1.20 (2, 160)	.30	.02
Time x Audio	9.03 (1, 160)	.00	.05
Audio x Video	0.41 (2, 160)	.66	.01
Time x Video x Audio	2.15 (2, 160)	.12	.03

Table 6.
Simple Simple Effects for the Three-Way Mixed Design ANOVA for Immediate Change in Perceived Dangerousness

Effect	*M* change T1-T2	*F* (*df*)	*p*	partial η^2
Control audio/Control video	2.04	5.96 (1, 160)	.02	.04
Control audio/Standard video	4.39	32.17 (1, 160)	.00	.17
Control audio/Enhanced video	4.71	40.93 (1, 160)	.00	.20
Simulation audio/Control video	2.04	6.19 (1, 160)	.01	.04
Simulation audio/Standard video	1.67	4.96 (1, 160)	.03	.03
Simulation audio/Enhanced video	1.68	4.70 (1, 160)	.03	.03

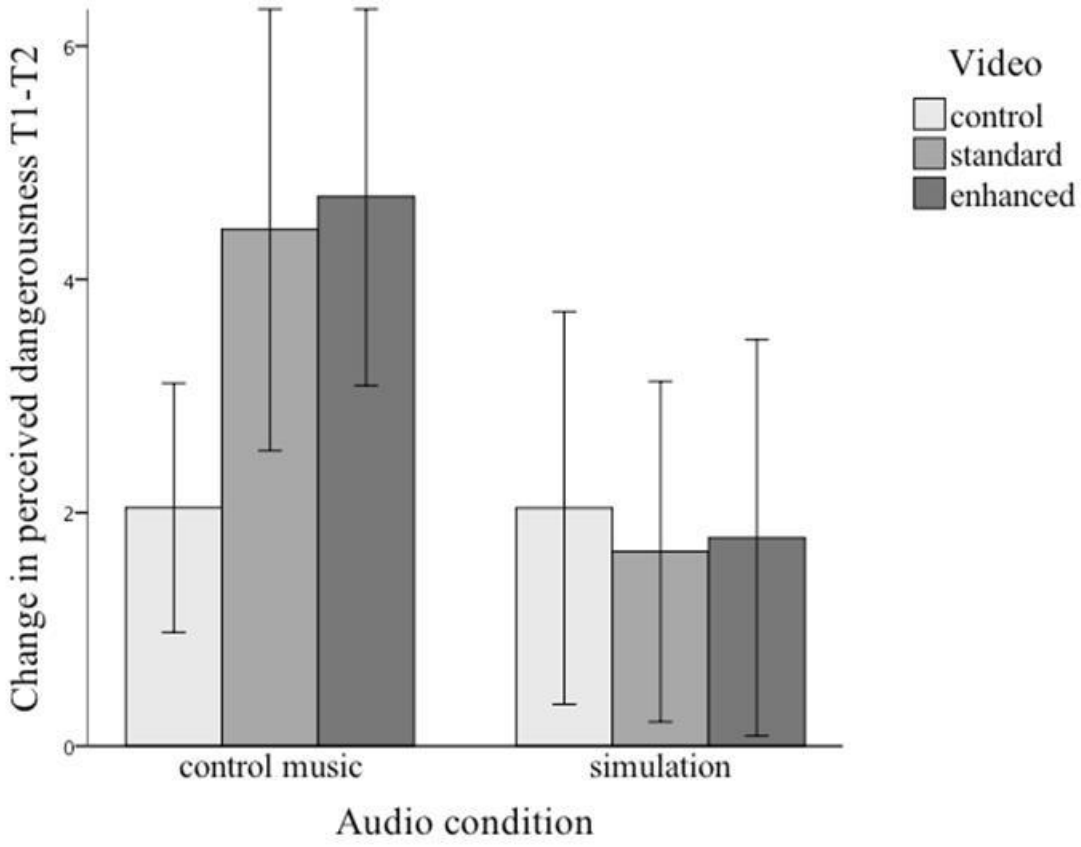

Figure 1. Clustered Bar Graph of Perceived Dangerousness Mean Pre-test minus Post-test Scores (T1 - T2) with 95% Confidence Intervals

Immediate Change in Social Distance. Table 7 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating immediate change in social distance. As seen in Table 7, Video x Time and Audio x Time interactions were present but a three-way interaction was not. As such, I examined the simple effect of time (change) within each video condition and audio condition, respectively. Figure 2 provides a bar graph that illustrates the mean change in social distance for each video condition. There was no apparent change in social distance in the control video condition (M_{Diff} = 0.66; F[1, 164] = 2.12, p = .15, partial η^2 = .01) but social distance decreased for the standard video condition (M_{Diff} = 1.76; F[1, 164] = 17.82, p = .00, partial η^2 = .10) and enhanced video condition (M_{Diff} = 2.41; F[1, 164] = 33.07,

$p = .00$, partial $\eta^2 = .17$). Decreases in social distance were greater in both the standard and enhanced video conditions than in the control video condition; $F(1, 164) = 3.21$, $p = .08$, partial $\eta^2 = .02$ and $F(1, 164) = 8.15$, $p = .01$, partial $\eta^2 = .05$ for the respective comparison of standard or enhanced video versus control video condition. No apparent differences in change in social distance were observed between the enhanced and standard video conditions, $F(1, 164) = 1.24$, $p = .27$, partial $\eta^2 = .01$. Thus, the standard and enhanced video contact conditions had small and moderate effects on social distance, respectively, and reduction in social distance was greater in the contact video conditions compared to the control video condition regardless of audio pairing.

Table 7.
Summary of the Three-Way Mixed Design ANOVA for Immediate Change in Social Distance

Effect	*F* (*df*)	*p*	partial η^2
Time	42.14 (1, 164)	.00	.32
Video	1.77 (2, 164)	.17	.02
Audio	0.14 (1, 164)	.71	.00
Time x Video	4.12 (2, 164)	.02	.05
Time x Audio	2.67 (1, 164)	.10	.02
Audio x Video	0.85 (2, 164)	.43	.01
Time x Video x Audio	0.22 (2, 164)	.81	.00

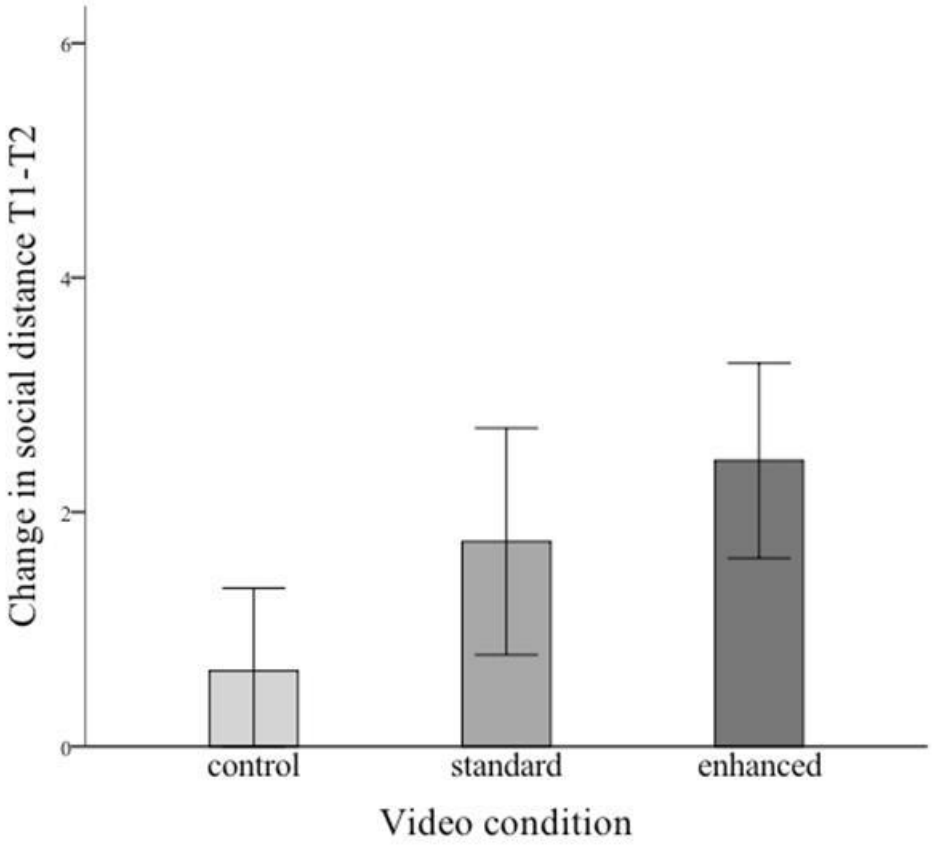

Figure 2. Bar Graph of Social Distance Mean Pre-test minus Post-test Scores (T1 - T2) with 95% Confidence Intervals by Video Condition

Figure 3 provides a bar graph that illustrates the mean decrease in social distance for the control audio (M_{Diff} = 2.01) and simulation (M_{Diff} = 1.20) conditions. There was a significant decrease in social distance for both the control audio (partial η^2 = .17) and simulation audio (partial η^2 = .07), but the decrease was not as great for the simulation audio, $F(1, 164) = 2.67$, $p = .10$, partial $\eta^2 = .02$.

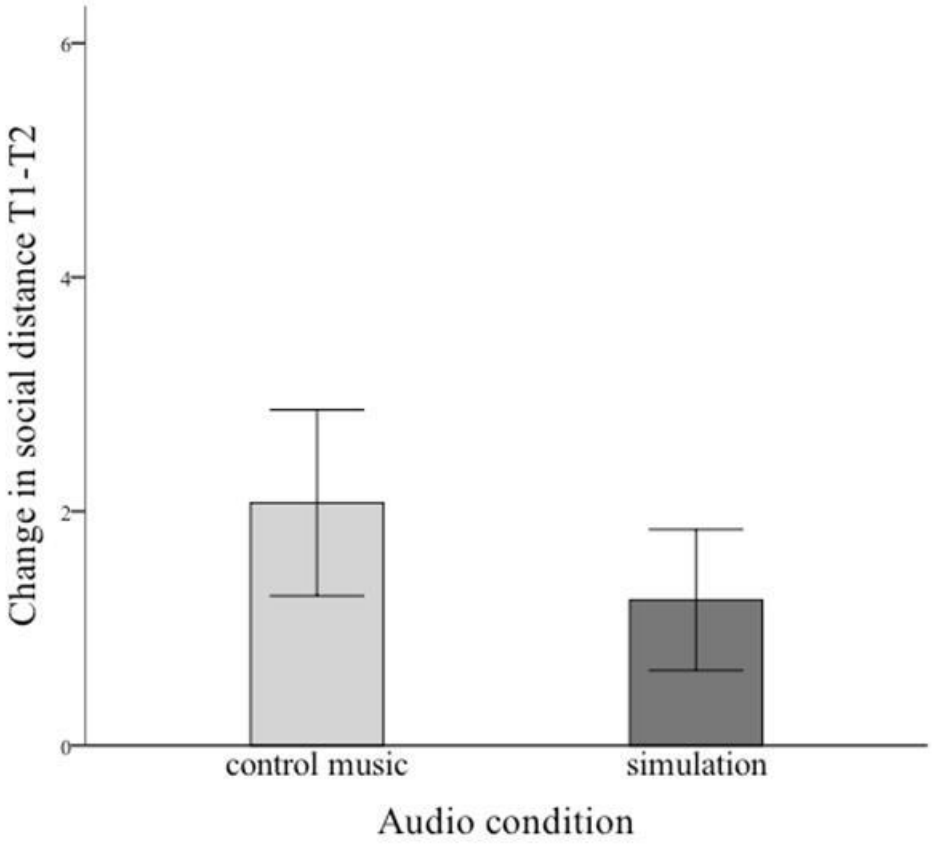

Figure 3. Bar Graph of Social Distance Mean Pre-test minus Post-test Scores (T1 - T2) with 95% Confidence Intervals by Audio Condition

Immediate Change in Belief in Forced Treatment. Table 8 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating immediate change in belief in forced treatment. As seen in Table 8, a significant three-way interaction effect was observed, suggesting that the effects of video condition on change in belief in forced treatment varied as a function of audio condition. To understand this pattern more clearly, simple simple effects were estimated (see Table 9). Only one simple simple effect (standard video in the absence of simulation) met the established criteria for a significant decrease in score. Figure 4 provides a clustered bar graph of mean pre-test minus post-test scores illustrating the absence of significant change in most conditions.

Table 8.
Summary of the Three-Way Mixed Design ANOVA for Immediate Change in Belief in Forced Treatment

Effect	*F* (*df*)	*p*	partial η^2
Time	1.67 (1, 164)	.20	.01
Video	0.49 (2, 164)	.61	.01
Audio	0.79 (1, 164)	.38	.01
Time x Video	2.70 (2, 164)	.07	.03
Time x Audio	5.29 (1, 164)	.02	.03
Audio x Video	2.45 (2, 164)	.09	.03
Time x Video x Audio	2.18 (2, 164)	.12	.03

Table 9.
Simple Simple Effects for the Three-Way Mixed Design ANOVA for Immediate Change in Belief in Forced Treatment

Effect	*M* change T1-T2	*F* (*df*)	*p*	partial η^2
Control audio/Control video	-0.10	0.01 (1, 164)	.91	.00
Control audio/Standard video	2.55	9.75 (1, 164)	.00	.06
Control audio/Enhanced video	1.19	2.28 (1, 164)	.13	.01
Simulation audio/Control video	-1.28	2.21 (1, 164)	.14	.01
Simulation audio/Standard video	-0.85	1.15 (1, 164)	.29	.01
Simulation audio/Enhanced video	1.11	1.77 (1, 164)	.19	.01

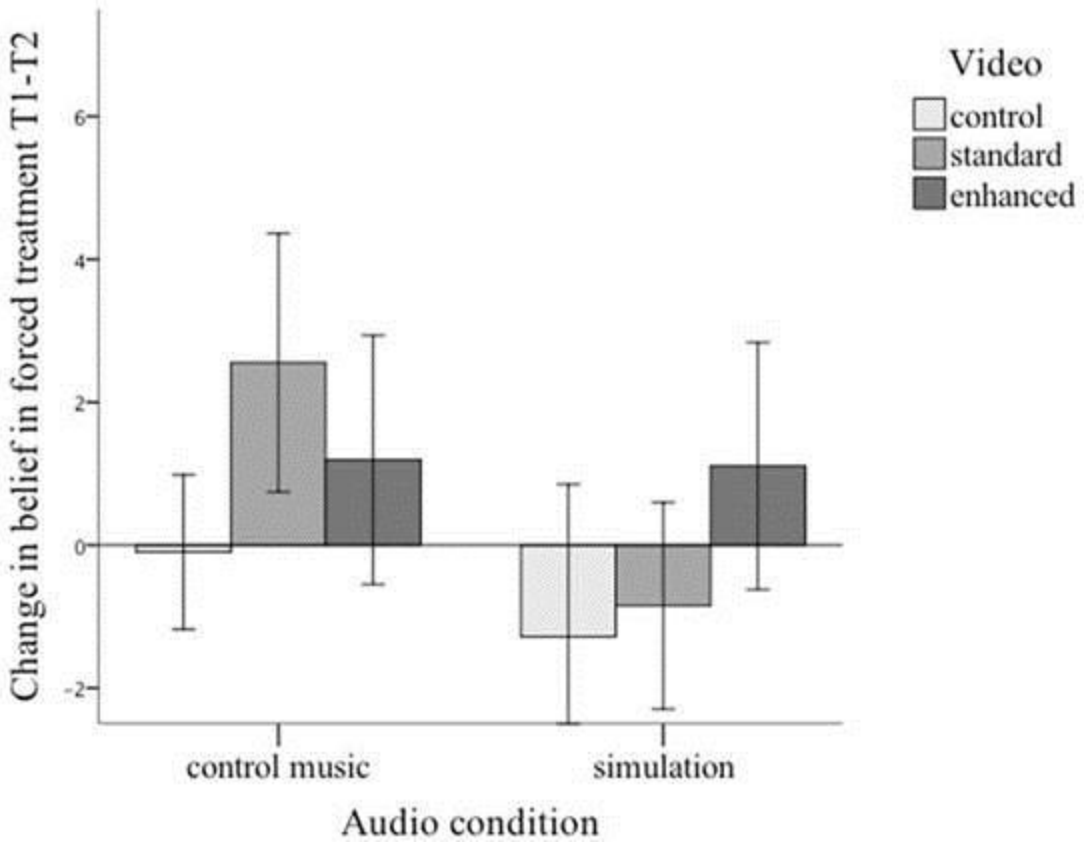

Figure 4. Clustered Bar Graph of Belief in Forced Treatment Mean Pre-test minus Post-test Scores (T1 - T2) with 95% Confidence Intervals

To test whether the amount of change in belief in forced treatment differed as a function of video condition, a series of simple effects tests comparing mean change between video conditions *within audio condition* were conducted. When coupled with the control audio condition, decrease in belief in forced treatment was greater in the standard video condition than in the control video condition, $F(1, 164) = 4.86$, $p = .03$, partial $\eta^2 = .03$. No apparent differences in change in belief in forced treatment were observed between the enhanced and control video conditions ($F[1, 164] = 1.42$, $p = .28$, partial $\eta^2 = .01$) or between the enhanced and standard video conditions, $F(1, 164) = 1.43$, $p = .23$, partial $\eta^2 = .01$. In comparison, when coupled with the simulation, decrease in belief in forced treatment was greater in the enhanced video

condition versus the control video condition (F[1, 164] = 3.98, p = .05, partial η^2 = .02) or standard video condition, F(1, 164) = 2.91, p = .09, partial η^2 = .02. No apparent difference in change in belief in forced treatment was observed between the standard and control video conditions, F(1, 164) = 0.14, p = .71, partial η^2 = .00. Thus, the standard video had a small effect on belief in forced treatment and outperformed the control video but only in the absence of the simulation. In contrast, the enhanced video had a small (non-significant) effect regardless of the paired audio recording.

Immediate Change in Negative Emotions. Table 10 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating immediate change in negative emotions. Tables 10 and 11 contain log-transformed data. As seen in Table 10, a significant three-way interaction effect was observed, suggesting that the effects of video condition on change in negative emotions varied as a function of audio condition. To understand this pattern more clearly, simple simple effects were estimated (see Table 11). All but one simple simple effect met the established criteria for a significant decrease in score. Figure 5 provides a clustered bar graph of mean pre-test minus post-test scores illustrating that change in negative emotions was most pronounced for the two contact videos at the control audio level.

Table 10.
Summary of the Three-Way Mixed Design ANOVA for Immediate Change in Negative Emotions

Effect	F (df)	p	partial η^2
Time	53.36 (1, 164)	.00	.25
Video	1.50 (2, 164)	.23	.02
Audio	0.02 (1, 164)	.88	.00
Time x Video	4.67 (2, 164)	.01	.05
Time x Audio	1.75 (1, 164)	.19	.01
Audio x Video	0.59 (2, 164)	.56	.01
Time x Video x Audio	1.56 (2, 164)	.21	.02

Table 11.
Simple Simple Effects for the Three-Way Mixed Design ANOVA for Immediate Change in Negative Emotions

Effect	*M* change T1-T2	*F* (*df*)	*p*	partial η^2
Control audio/Control video	0.04	0.84 (1, 164)	.36	.01
Control audio/Standard video	0.14	14.44 (1, 164)	.00	.08
Control audio/Enhanced video	0.21	37.72 (1, 164)	.00	.19
Simulation audio/Control video	0.07	3.11 (1, 164)	.08	.02
Simulation audio/Standard video	0.08	5.97 (1, 164)	.02	.04
Simulation audio/Enhanced video	0.12	9.94 (1, 164)	.00	.06

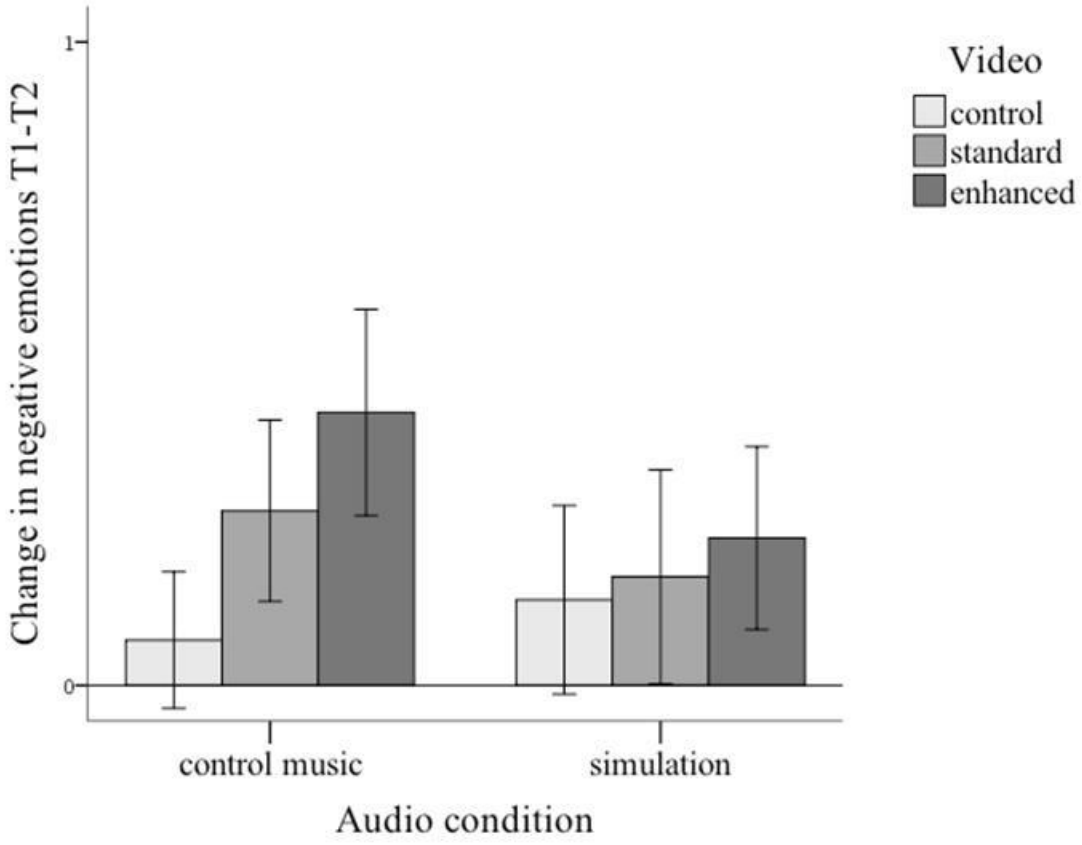

Figure 5. Clustered Bar Graph of Transformed Negative Emotions Mean Pre-test minus Post-test Scores (T1 - T2) with 95% Confidence Intervals

To test whether the amount of change in negative emotions differed as a function of video condition, a series of simple effects tests comparing mean change between video conditions *within audio condition* were conducted. Considering the control audio condition, the decrease in perceived dangerousness was smaller in the control video

condition than either the standard video or enhanced video conditions (see Table 11). When coupled with the audio control condition, decrease in negative emotions was greater in both the standard and enhanced video conditions than in the control video condition; $F(1, 164) = 3.69$, $p = .06$, partial $\eta^2 = .02$ and $F(1, 164) = 11.59$, $p = .00$, partial $\eta^2 = .07$ for the standard and enhanced video comparisons, respectively. The amount of decrease in negative emotions was similar for the enhanced and standard video conditions, $F(1, 164) = 2.31$, $p = .13$, partial $\eta^2 = .01$. In comparison, within the simulation audio condition, the amount of change in negative emotions did not differ as a function of video condition, $F(2, 164) = 0.43$, $p = .65$, partial $\eta^2 = .01$. Thus, the standard and enhanced video conditions had a small and moderate immediate effect on negative emotions, respectively, and they outperformed the control video condition but only in the absence of the simulation. The difference in effect between the two contact videos did not reach significance regardless of the audio introduced.

Longer-term Change. Next, I will present the models estimating the longer-term effects (from T1 pre-test to T3 three-week post-test). The same basic strategy as above is undertaken, however, due to attrition, the maximum sample size is $N = 84$.

Longer-term Change in Perceived Dangerousness. Table 12 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating longer-term change in perceived dangerousness. As seen in Table 12, a significant three-way interaction effect was observed, suggesting that the effects of video condition on change in dangerousness varied as a function of audio condition. To understand this pattern more clearly, simple simple effects were estimated and all six effects met the established criteria for a significant decrease in score (see Table 13).

Figure 6 provides a clustered bar graph of mean pre-test minus T3 post-test scores illustrating that change in perceived dangerousness was most pronounced for the standard video condition at the control audio level.

Table 12.
Summary of the Three-Way Mixed Design ANOVA for Longer-term Change in Perceived Dangerousness

Effect	*F* (*df*)	*p*	partial η^2
Time	29.37 (1, 76)	.00	.28
Video	0.01 (2, 76)	.99	.00
Audio	0.04 (1, 76)	.84	.00
Time x Video	0.18 (2, 76)	.83	.01
Time x Audio	0.15 (1, 76)	.70	.00
Audio x Video	0.40 (2, 76)	.67	.01
Time x Video x Audio	2.78 (2, 76)	.07	.07

Table 13.
Simple Simple Effects for the Three-Way Mixed Design ANOVA for Longer-term Change in Perceived Dangerousness

Effect	*M* change T1-T2	*F* (*df*)	*p*	partial η^2
Control audio/Control video	1.91	1.70 (1, 76)	.20	.02
Control audio/Standard video	5.33	18.07 (1, 76)	.00	.19
Control audio/Enhanced video	2.36	2.60 (1, 76)	.11	.03
Simulation audio/Control video	3.78	10.88 (1, 76)	.00	.13
Simulation audio/Standard video	1.53	1.68 (1, 76)	.20	.02
Simulation audio/Enhanced video	3.00	3.81 (1, 76)	.06	.05

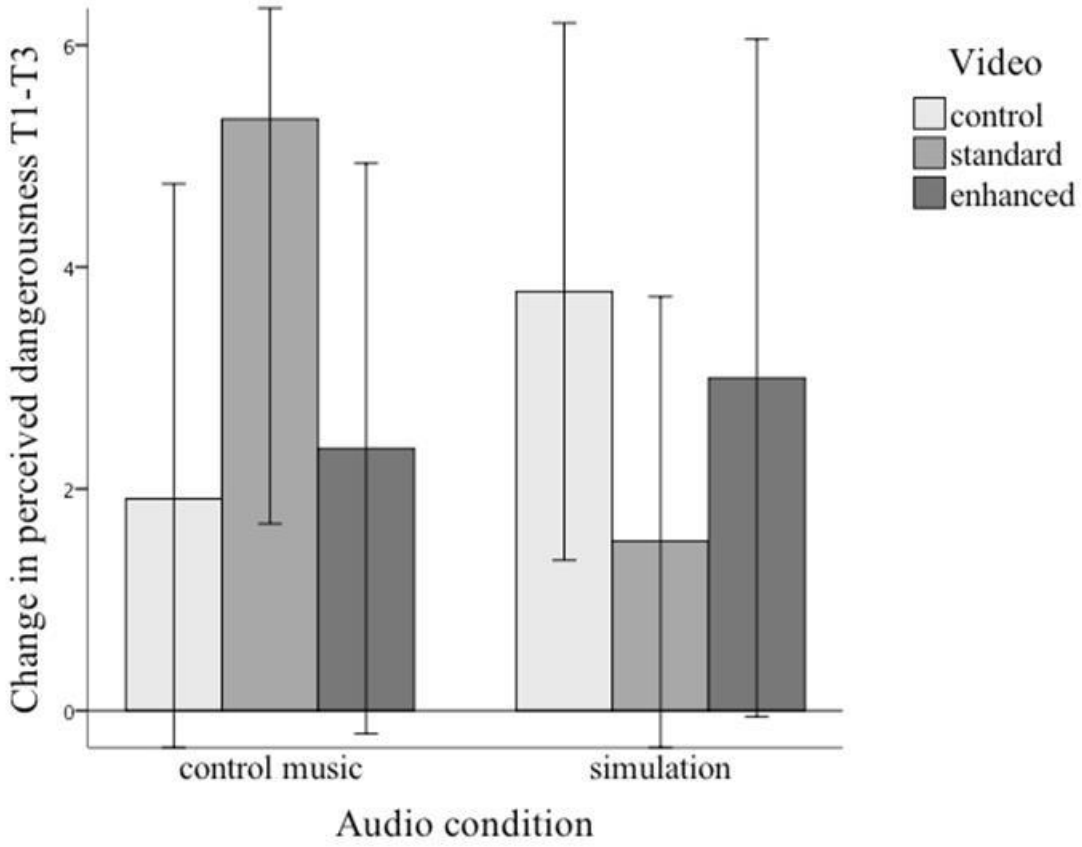

Figure 6. Clustered Bar Graph of Perceived Dangerousness Mean Pre-test minus Post-test Scores (T1 - T3) with 95% Confidence Intervals

To test whether the amount of longer-term change in perceived dangerousness differed as a function of video condition, a series of simple effects tests comparing mean change between video conditions *within audio condition* were conducted. When coupled with the control audio condition, decrease in perceived dangerousness was greater in the standard video condition than in the control video condition (F[1, 76] = 3.15, p = .08, partial η^2 = .04) or the enhanced video condition, F(1, 76) = 1.54, p = .13, partial η^2 = .02. However, within the simulation audio condition, decrease in perceived dangerousness was smaller in the standard video condition than in the control video condition, F(1, 76) = 1.87, p = .18, partial η^2 = .02. No apparent differences in change in perceived dangerousness were observed between enhanced and control video conditions

regardless of audio pairing; $F(1, 76) = 0.05$, $p = .83$, partial $\eta^2 = .00$ and $F(1, 76) = 0.16$, $p = .69$, partial $\eta^2 = .00$ for the control audio and simulation levels, respectively. The difference in decrease between the enhanced and standard video conditions paired with simulation was also non-significant, $F(1, 76) = 0.57$, $p = .45$, partial $\eta^2 = .01$.

In summary, perceived dangerousness was still significantly lower at T3 for all video and audio level pairings. The standard video condition still had a moderate effect on outcome and the reduction in perceived dangerousness was greater than in the control and enhanced video conditions but only in the absence of simulation. In contrast, regardless of whether the enhanced video was paired with simulation or not, its effect was small by T3 and the reduction in perceived dangerousness was not greater than that seen in the other video conditions.

Longer-term Change in Social Distance. Table 14 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating longer-term change in social distance. As seen in Table 14, a significant three-way interaction effect was observed, suggesting that the effects of video condition on change in social distance varied as a function of audio condition. To help understand this pattern, simple simple effects were estimated (see Table 15). All but one simple simple effect met the established criteria for a significant pre-test minus T3 post-test score. Figure 7 provides a clustered bar graph of mean pre-test minus T3 post-test score illustrating change in social distance for all factor pairings.

Table 14.
Summary of the Three-Way Mixed Design ANOVA for Longer-term Change in Social Distance

Effect	*F* (*df*)	*p*	partial η^2
Time	19.47 (1, 78)	.00	.20
Video	0.75 (2, 78)	.48	.02
Audio	0.62 (1, 78)	.43	.01
Time x Video	2.49 (2, 78)	.09	.06
Time x Audio	0.44 (1, 78)	.51	.01
Audio x Video	1.00 (2, 78)	.37	.03
Time x Video x Audio	0.90 (2, 78)	.41	.02

Table 15.
Simple Simple Effects for the Three-Way Mixed Design ANOVA for Longer-term Change in Social Distance

Effect	*M* change T1-T2	*F* (*df*)	*p*	partial η^2
Control audio/ Control video	1.94	2.27 (1, 78)	.14	.03
Control audio/Standard video	2.53	4.84 (1, 78)	.03	.06
Control audio/Enhanced video	3.09	5.28 (1, 78)	.02	.06
Simulation audio/Control video	-0.56	0.28 (1, 78)	.60	.00
Simulation audio/Standard video	2.41	4.97 (1, 78)	.03	.06
Simulation audio/Enhanced video	3.73	7.68 (1, 78)	.01	.09

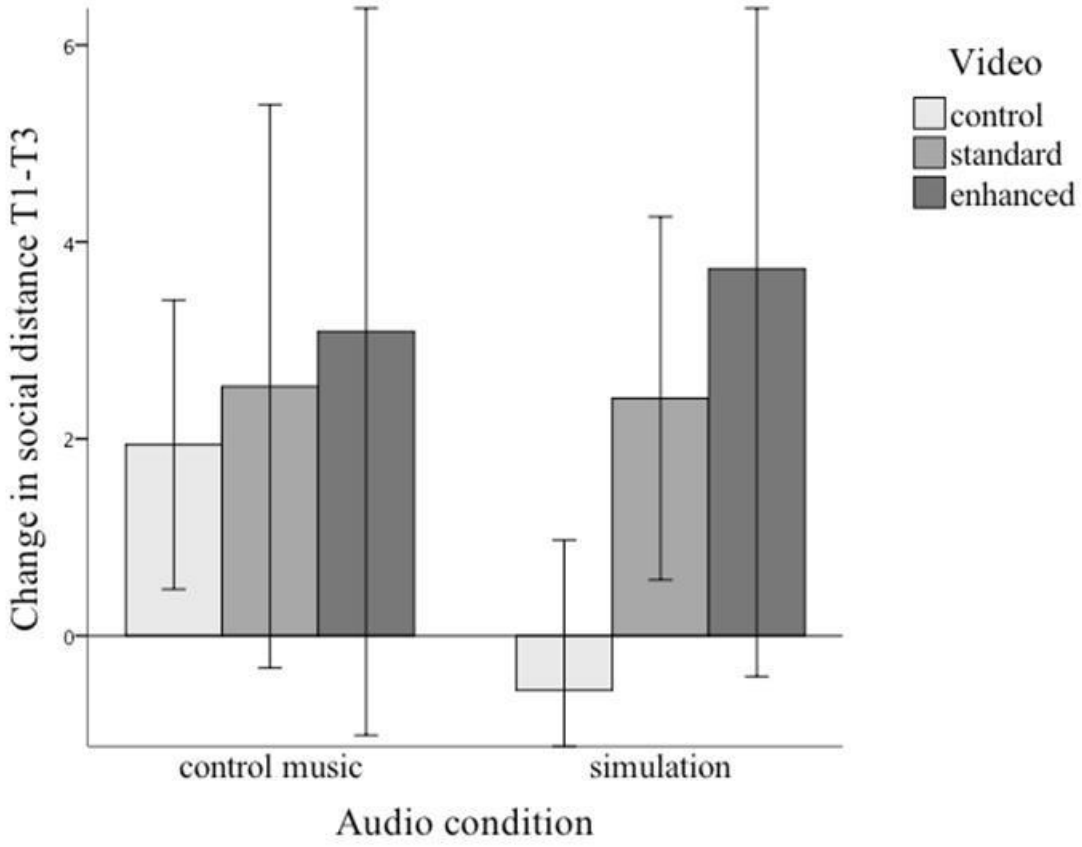

Figure 7. Clustered Bar Graph of Social Distance Mean Pre-test minus Post-test Scores (T1 - T3) with 95% Confidence Intervals

To test whether the amount of longer-term change in social distance differed as a function of video condition, a series of simple effects tests comparing mean change between video conditions *within audio condition* were conducted. Within the control audio condition, there were no apparent differences in effect on social distance among the video conditions, $F(2, 76) = 0.19$, $p = .83$, partial $\eta^2 = .01$. In contrast, within the simulation condition, decrease in perceived dangerousness in the contact video conditions was still small but relatively larger than in the control video condition; $F(1, 76) = 3.87$, $p = .05$, partial $\eta^2 = .05$ and $F(1, 76) = 6.30$, $p = .01$, partial $\eta^2 = .08$ for the respective standard and enhanced video versus control video comparisons. No apparent differences in change in change in social distance were observed between the enhanced and standard

contact conditions paired with the simulation, $F(1, 76) = 0.58$, $p = .45$, partial $\eta^2 = .01$. Thus, social distance was still reduced at T3 (i.e., small effects) for those exposed to either contact video, regardless of whether they experienced the simulation. Social distance was now also reduced (small effect) for those in the control audio plus control video intervention. Social distance did not change significantly for those exposed to the simulation that did not watch a contact video.

Longer-term Change in Belief in Forced Treatment. Table 16 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating longer-term change in belief in forced treatment. As seen in Table 16, a significant three-way interaction effect was observed, suggesting that the effects of video condition on change in belief in forced treatment varied as a function of audio condition. To explore this pattern, simple simple effects were estimated (see Table 17). The only significant decrease in belief in forced treatment occurred in some of the contact conditions. The standard video had a moderate effect but only in the absence of simulation while the enhanced video had a small effect regardless of audio type. Figure 8 provides a clustered bar graph of mean pre-test minus T3 post-test scores illustrating this pattern.

Table 16.
Summary of the Three-Way Mixed Design ANOVA for Longer-term Change in Belief in Forced Treatment

Effect	F (df)	p	partial η^2
Time	20.65 (1, 78)	.00	.21
Video	1.01 (2, 78)	.37	.03
Audio	0.05 (1, 78)	.82	.00
Time x Video	1.79 (2, 78)	.17	.04
Time x Audio	3.12 (1, 78)	.08	.04
Audio x Video	1.99 (2, 78)	.14	.05
Time x Video x Audio	1.94 (2, 78)	.15	.05

Table 17.
Simple Simple Effects for the Three-Way Mixed Design ANOVA for Longer-term Change in Belief in Forced Treatment

Effect	*M* change T1-T2	*F* (*df*)	*p*	partial η^2
Control audio/Control video	1.30	1.12 (1, 78)	.29	.01
Control audio/Standard video	4.20	14.67 (1, 78)	.00	.16
Control audio/Enhanced video	3.46	7.28 (1, 78)	.01	.09
Simulation audio/Control video	0.78	0.60 (1, 78)	.44	.01
Simulation audio/Standard video	0.00	0.00 (1, 78)	1.00	.00
Simulation audio/Enhanced video	3.16	6.10 (1, 78)	.02	.07

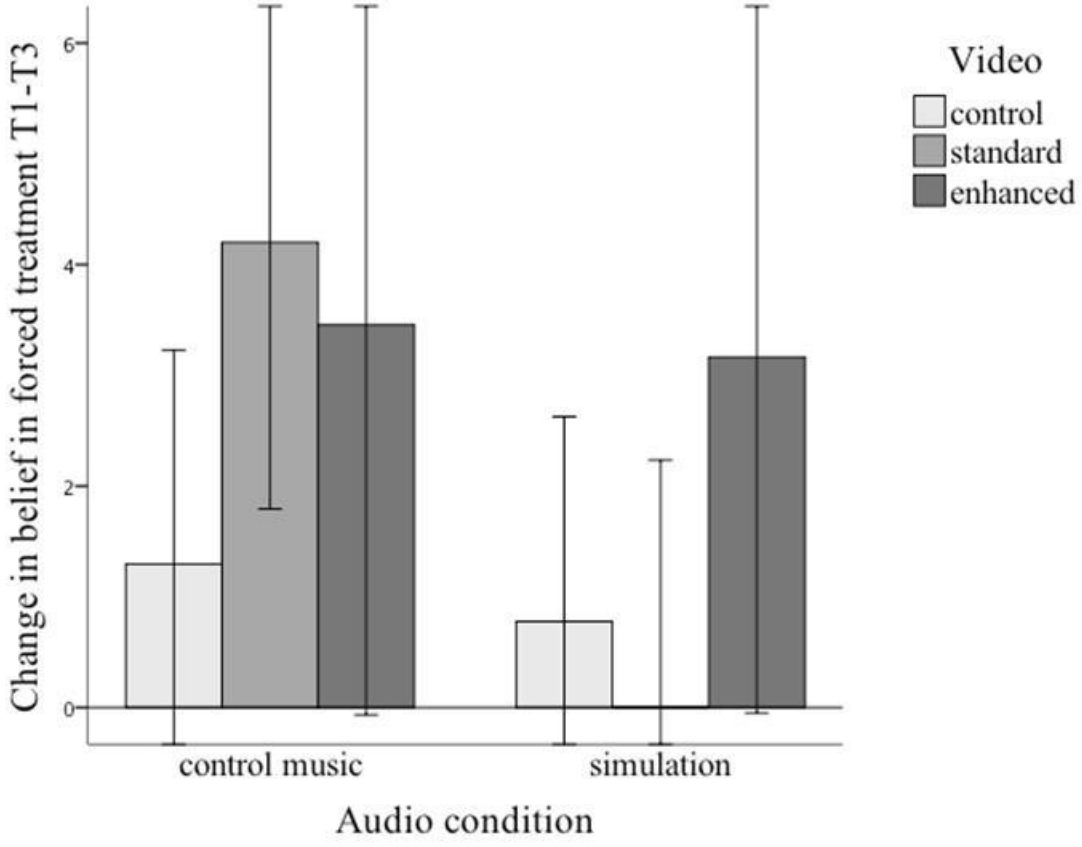

Figure 8. Clustered Bar Graph of Belief in Forced Treatment Mean Pre-test minus Post-test Scores (T1 - T3) with 95% Confidence Intervals

To test whether the amount of change in belief in forced treatment differed as a function of video condition, a series of simple effects tests comparing mean change between video conditions *within audio condition* were conducted. When coupled with the control audio condition, decrease in belief in forced treatment was greater in the standard

and enhanced video conditions versus the control condition; $F(1, 78) = 3.12$, $p = .08$, partial $\eta^2 = .04$ and $F(1, 78) = 1.48$, $p = .23$, partial $\eta^2 = .02$ for the respective standard and enhanced video versus control video comparisons. No apparent differences in change in belief in forced treatment were observed between the standard and enhanced video conditions, $F(1, 78) = 0.20$, $p = .66$, partial $\eta^2 = .00$. In comparison, when coupled with the simulation, decrease in belief in forced treatment was greater in the enhanced video versus control video condition ($F[1, 78] = 2.16$, $p = .15$, partial $\eta^2 = .03$) and enhanced video versus standard video condition, $F(1, 78) = 3.71$, $p = .06$, partial $\eta^2 = .05$. No apparent differences in change in belief in forced treatment were observed between the control video and standard video conditions, $F(1, 78) = 0.29$, $p = .59$, partial $\eta^2 = .00$. Thus, the standard video condition had a moderate size effect on belief in forced treatment and outperformed the control video condition but only in the absence of the simulation. In contrast, the enhanced video had a small effect regardless of whether the simulation was introduced. Belief in forced treatment was only reduced for interventions that contained a contact video.

Longer-term Change in Negative Emotions. Table 18 provides the ANOVA summary table of the 2 (Time) x 2 (Audio) x 3 (Video) mixed design ANOVA evaluating longer-term change in negative emotions. Data were log-transformed. No two-way or three-way interactions were observed that would suggest that either the contact video or simulation interventions had a significant impact on negative emotions. There was a large main effect of time, however, wherein negative emotions decreased for all participants on average (*M*s = 0.88 and 0.79 for T1 and T3, respectively). Figure 9 provides a clustered bar graph of mean transformed pre-test minus T3 post-test scores illustrating that the

decrease in negative emotions was relatively uniform across the different factor level pairings.

Table 18.
Summary of the Three-Way Mixed Design ANOVA for Longer-term Change in Negative Emotions

Effect	*F* (*df*)	*p*	partial η^2
Time	27.18 (1, 78)	.00	.26
Video	0.55 (2, 78)	.58	.01
Audio	1.37 (1, 78)	.25	.02
Time x Video	0.46 (2, 78)	.63	.01
Time x Audio	1.02 (1, 78)	.32	.01
Audio x Video	0.28 (2, 78)	.75	.01
Time x Video x Audio	0.10 (2, 78)	.90	.00

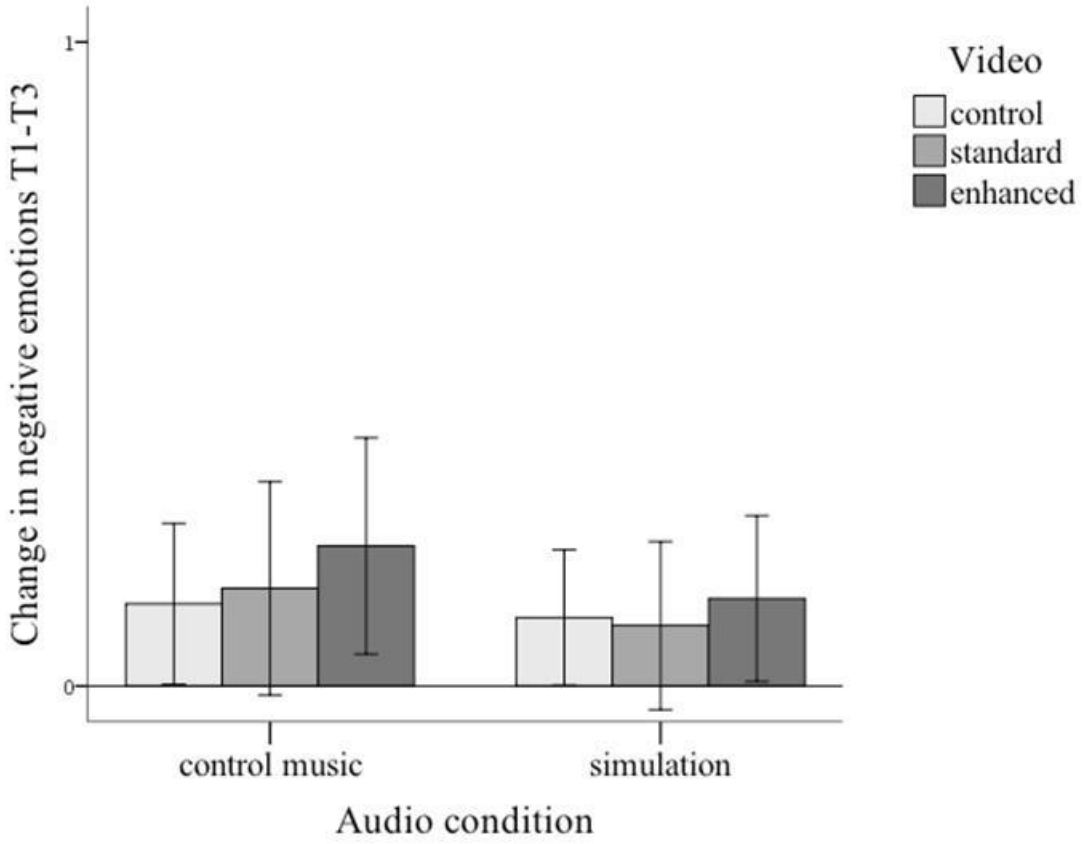

Figure 9. Clustered Bar Graph of Transformed Negative Emotions Mean Pre-test minus Post-test Scores (T1 - T3) with 95% Confidence Intervals

Discussion

The current study examined the immediate and longer-term effectiveness of a standard and enhanced social contact video on perceived dangerousness, social distance, belief in forced treatment, and negative emotions toward people with schizophrenia within a college-age population. I also examined whether adding a psychosis simulation exercise dampens the effects of these contact videos. The study's enhanced video was my own video that targets a college student audience while the standard video and simulation are the main components of the *Hearing Voices that are Distressing* stigma intervention. The findings offer a complex picture of the impact of contact videos and the effectiveness of pairing contact videos with simulation. For many outcomes, one or both contact videos had a greater immediate effect than the control video unless simulation was added. There was also evidence for longer-term contact video effects. The magnitude of these effects was generally small, as expected, and the enhanced contact video did not have a greater immediate or longer-term effect than the standard contact video for any outcome. These findings are discussed below.

Regarding the immediate effects of the videos, as a reminder, I expected the simulation to increase negative attitudes and emotions, and therefore dampen significant contact effects. I found partial support for the hypothesis that the contact videos reduce perceived dangerousness, social distance, belief in forced treatment, and negative emotions towards people with schizophrenia *but only in the absence of simulation*. Specifically, for perceived dangerousness and negative emotions, both contact videos had a greater effect than the control video but only in the absence of simulation (all small effect sizes or ES). For belief in forced treatment, the standard contact video had a greater

effect than the control video but only in the absence of simulation (small ES); the enhanced video did not have a greater effect than the control video in the absence of simulation. In the case of social distance, both contact videos had a greater effect than the control video regardless of the presence of simulation (all small ES). Thus, the hypothesis that the addition of simulation would render contact video effects non-significant was not supported for social distance for either contact video or for belief in forced treatment for the enhanced video. Regarding change over time, for contact videos without simulation, I found significant decreases from baseline to immediate post-test in perceived dangerousness (moderate ES), social distance (small ES for standard, moderate for enhanced), belief in forced treatment (small ES for standard), and negative emotions (small ES for standard, moderate ES for enhanced).

In comparing these immediate effects to those from prior studies, the literature suggests that contact videos have small comparative effects on social distance versus inactive and education control conditions (Corrigan et al., 2012). Thus, the present study's small contact video effects on social distance were within the expected range. For perceived dangerousness, this study provides the first known evidence that contact videos can have small comparative effects. Neither Corrigan and colleagues (2007) nor Penn and colleagues (2003) found any evidence that contact videos have a greater effect than education on perceived dangerousness or that contact videos reduce perceived dangerousness. The greater effects on perceived dangerousness in the present study may relate to the content of the contact videos. Corrigan and colleagues (2007) used a briefer (10-minute) contact video and Penn et al.'s video featured speakers with chronic illness and someone who dies by suicide. In contrast, the current study's contact videos do not

feature any violence or self-inflicted violence. Instead, they feature higher functioning speakers in recovery and thus disconfirm the myth that people do not recover from schizophrenia. A speaker in the enhanced video also addresses dangerousness. An alternative explanation to video content for this study's greater effects is that the AQ-27 may be more sensitive to change than Penn et al.'s measure (Dangerous Scale, Link et al., 1987), which needs more evaluation for change sensitivity (Wei, McGrath, Hayden, & Kutcher, 2015). Additionally, the present study's sample was more racially diverse, containing more Asian Americans. A previous study found that Asians' perceptions of the dangerousness of people with mental illness changed significantly more with brief interventions than the perceptions of other racial/ethnic groups (Rao, Feinglass, & Corrigan, 2007). In the present study, mean stigma change was greater for Asians and racial minorities than Caucasians and suggests that the different racial/ethnic composition of the samples may have influenced intervention effects.

The present study also found that the standard HVD video has the potential to immediately decrease belief in forced treatment, both versus control video and over time. In contrast, the enhanced video did not significantly reduce belief in forced treatment from baseline to immediate post-test, although mean stigma change was in the desired direction. The discrepancy in effects between these contact videos could relate to their thematic content. For example, the speaker in the standard contact video directly addressed how people with schizophrenia deserve self-directed lives and to be empowered. She also shared her difficulties with treatment providers not listening to her and described coping skills, which could reinforce the message that consumers can be skillful partners in their care. In contrast, the young adult speakers in the enhanced video

focused little on consumer empowerment or self-direction and instead normalized hospitalization and accepting help. Therefore, these different themes and speakers may have influenced whether participants thought about forced treatment and their attitudes. Looking to the literature, the only known previous study of video contact and forced treatment (Corrigan et al., 2007) did not find a significant decrease in belief. Corrigan et al.'s contact video was brief, however, and featured adults with more symptoms and lower functioning. Moreover, the speakers did not express the need for empowerment and autonomy, which could be influential on audience beliefs about the value of coercion.

Next, the present study suggests that contact videos can lead to an immediate decrease in negative emotions toward people with schizophrenia. In particular, the contact videos led to decreased anger/irritation. Previous studies (Clement et al., 2010; Corrigan et al., 2007) have not found a similar significant effect of contact video on anger and anger/irritation. Perhaps the present study's videos had a greater effect on this outcome since they also apparently reduced perceived dangerousness and targeted blame for schizophrenia. These factors likely increase social distance and have a strong effect on how people emotionally react to people with schizophrenia (Pingani et al., 2016; Sousa, Marques, Curral, & Queirós, 2012). Alternatively, the properties of the contact videos in previous studies may have limited their effectiveness for this target. For example, Corrigan et al.'s video may have been too brief to be effective and Clement et al.'s (2012) contact video featured caregivers as well as a consumer. Thus, Clement et al.'s participants spent less time overall with a consumer, which may have reduced the effect. Also, in contrast to this study, Clement et al.'s measure featured a woman and their sample was nursing students, which may have restricted baseline scores and thus

effects.

The study of longer-term effects of social contact is a nascent research area and few significant contact effects have been found, particularly for videos (Mehta et al., 2015). Nonetheless, the present study found some promising longer-term significant effects for contact videos. The standard contact video had a greater effect on perceived dangerousness than the control video (small ES) but only in the absence of simulation; perceived dangerousness was reduced from baseline (moderate ES). The enhanced contact video did not have a greater effect than the control video on perceived dangerousness regardless of the presence of simulation yet perceived dangerousness was still reduced from baseline (small ES). For belief in forced treatment, the standard contact video had a greater effect than the control video (small ES) but only in the absence of simulation; belief in forced treatment was reduced from baseline (moderate ES). In contrast, the enhanced video had a greater effect than the control video on belief in forced treatment regardless of the presence of simulation; belief in forced treatment was reduced from baseline (all small ES). Regarding social distance and negative emotions, neither contact video had a greater effect than the control video, nor was there evidence for the hypothesized interactive effect of audio and video factors. For both contact videos, however, social distance and negative emotions were significantly reduced from baseline (all small ES). In general, caution should be exercised in interpreting these findings, however, because of the potential impact of attrition (e.g., altered study sample, power for analyses) or nonlinear effects.

There are too few prior studies of longer-term contact effects and almost no estimates of video contact effects for comparison with the above findings. Clement et al.

(2012) found that a contact video reduced social distance, but not anger, more than an education control condition. Clement and colleagues included a facilitated discussion in their contact video intervention, which may have enhanced the effect. Their study also used different scales and a different sample (nursing students). Taken together, these two studies provide some promising evidence of the potential for contact videos to have longer-term effects on several aspects of stigma, even as these findings require further replication. One of the more interesting longer-term findings was that, for some outcomes (e.g., belief in forced treatment), it appears that the enhanced video may be more robust to the potential negative impact of simulation than the standard video. If so, this difference in videos might be explained by differences in facilitating factors (e.g., similarity to the audience) or other video content (e.g., speaker age, number of speakers). Although the connection to facilitating factors is speculative, it is perhaps worthy of further investigation.

Another notable finding is that stigma unexpectedly decreased for participants exposed to control components (control audio + control video) for some outcomes (e.g., longer-term change in negative emotions and social distance). Listening to pleasant music or watching the earth video could have influenced emotions or arousal, which could have influenced post-test responses for some outcomes (e.g., anger/irritation). Alternatively, decreases in stigma could reflect the fact that participants reflected on mental health issues during assessment, which can alter mental health-related attitudes (Wright et al., 2006). Another possible explanation for some of the unexpected decreases in stigma scores, either after exposure to control components or more generally, is that completing outcome measures at baseline primed participants to report more positive attitudes later

on. Or perhaps participants guessed the study hypothesis. Thus, it is likely that some of decreases in negative attitudes or emotions within the study reflect social desirability, demand characteristics, or reaction to assessment. This is also why control components were incorporated into the study design.

Next, findings from the present study did not support the study's hypothesis that effects are greater for the enhanced contact video versus standard contact video. The effect of the enhanced video was never significantly greater for any outcome for either immediate or longer-term effects. There was a greater immediate decrease in negative emotions for the enhanced versus standard video in the absence of simulation but this difference did not reach significance. Thus, facilitating factors, as operationalized in this study, do not appear to contribute to the impact of a brief contact video intervention. This lack of evidence for the role of facilitating factors was surprising, particularly for social distance and perceived dangerousness, since the enhanced video was targeted to these outcomes and associated myths. However, given the theoretical support for facilitating factors, it seems more likely that the current study's design was flawed than that facilitating factors do not contribute to effects. Perhaps video differences unrelated to facilitating factors (e.g., production quality, brevity of individual speakers) limited the effects of the enhanced video. Or perhaps the contact videos were too similar in facilitating factors, having at least one shared facilitating factor (e.g., higher stereotype disconfirmation) that might have overshadowed other differences. More possibilities are that facilitating factors were not effectively inserted into the video, the enhanced video did not contain an effective balance of contact and facilitating factors, or that facilitating factors are less important for contact in this college-age population. Future studies of

enhanced contact, with an improved design, are needed to challenge these findings and to address questions about facilitating factors and the active ingredients of contact.

Results from this study also have implications related to the HVD workshop. Findings of several significant immediate and longer-term HVD standard contact video effects support the continued use of the HVD contact video for this population. However, study findings also raise important questions about whether it might be best to exclude the simulation exercise. More quantitative research is needed to replicate the dampening effect of simulation on contact and to examine the effectiveness of the full HVD workshop with all of its components (contact video, simulation, simulation tasks, facilitated discussion) on these and other stigma outcomes (e.g., blame, segregation). The facilitated discussion was dropped from the present study to standardize the participant experience across interventions and to create an individual intervention experience. However, discussion is theorized to increase and help sustain the effects of stigma interventions (Mann & Himelein, 2008). Thus, future research could investigate whether facilitated discussion, or even the age-appropriate tasks completed during this study's simulation, enhances the effects of the HVD workshop.

Finally, although the effects of psychosis simulations were not the main focus of this study, there are some findings worth mentioning beyond dampening effects. First, simulation did not significantly increase negative attitudes and emotions in general. However, there was a small (non-significant) increase in belief in forced treatment when simulation was paired with either the control or standard video. This finding is consistent with findings from Brown (2010) of a small significant immediate increase in belief in forced treatment following an audio psychosis simulation with college students. A second

finding of note was that social distance decreased significantly more with the control audio than the simulation at T2. That social distance scores decreased rather than increased with simulation was curious considering that prior studies of the same audio simulation have found medium immediate iatrogenic effects on social distance (Ando et al., 2010; Brown et al., 2010). It could be that social desirability or another process masked negative simulation effects. Regardless of the underlying explanation, this study's findings on simulation, taken together with the literature, suggest that simulation is generally less effective in reducing negative attitudes and emotions than social contact. Additionally, simulation may have unintended negative effects, such as reducing the effectiveness of contact.

Limitations, Strengths, & Future Directions

A limitation of the study is that the measurement of outcomes may have been impacted by the self-selection of participants and the transparency of the study's purpose. Participants knew in signing-up for the study that it was a study about attitudes toward social groups. Moreover, the pre-intervention measures focused on mental illness stigma. As such, participants may have altered their report due to demand characteristics or been motivated to underreport negative attitudes and reactions because of social desirability. Underreporting of stigmatizing attitudes and reactions at T1 could have reduced the extent of change in scores and thus restricted my ability to detect significant effects. Future studies could do more to mask the purpose of the study.

A related limitation is the study's reliance on the AQ-27 and SDS for outcome measurement. Our knowledge of stigma interventions is only as good as the instruments for studying them, and more research is needed to validate the AQ-27 and SDS,

particularly for sensitivity to small attitude changes toward people with schizophrenia. Furthermore, because this study relied exclusively on these self-report measures, social desirability effects and demand characteristics may have altered study results. In the future, research that involves self-report measures of attitudes should investigate whether participants provided genuine responses or guessed the study's hypotheses. Researchers might also consider including additional measures of attitudes (e.g., implicit attitude, non-vignette-based), behavioral intentions, or discriminatory or helping behaviors. Vignette-based attitude measures have their advantages but often feature an adult with a chronic course of schizophrenia. Stigmatizing attitudes toward younger and higher functioning people with schizophrenia are also of interest and may be more impacted by the study's enhanced contact video.

Further, measuring facilitating factors is still a new avenue of research. Related limitations to this study include that some facilitating factors for mental illness contact have been theorized but need more empirical support. In addition, the extent of facilitating factors in each contact video was subjectively evaluated and the contact videos share a facilitating factor and have differences beyond facilitating factors. Moreover, the enhanced video has ties to the campus of the study sample, which could have impacted participant report of stigma. Therefore, the enhanced video needs to be tested elsewhere to see if its effects are generalizable. Also, given these concerns and the challenges of finding an appropriate pair of standard and enhanced contact videos with which to test this question, future researchers could create a pair of contact and control videos that maximizes the differences in facilitating factors and minimizes the differences in other factors.

Next, the generalizability of these study results is restricted, in part because participants were mainly lower classmen enrolled in psychology courses at one university. Therefore, caution should be exercised in extending these findings to different populations and results should be replicated in different samples, including young adults in the community. Additional study limitations included attrition, which altered the sample for longer-term analyses. Related, it is unclear if T3 completion was influenced by internal factors (e.g., researcher loyalty, interest in mental health stigma) that might influence the generalizability of the longer-term findings. Attrition also reduced the sample size for longer-term analyses and thus could have reduced analytic power to detect longer-term significant effects. Future researchers could attempt to address attrition with retention strategies, by measuring internal factors at baseline, and by asking people why they did not complete the study.

Study strengths include the testing of the videos and simulation in a real world campus setting and with students of diverse racial backgrounds, which is unusual among this literature. Most U.S. studies of mental illness public stigma interventions have had a predominantly Caucasian sample (e.g., Brown, 2010, Brown et al., 2010; Hackler, 2011). Future studies could examine the effects of these interventions in different samples (e.g., predominantly African-American or Asian, high school students, family members of young adults with mental illness) and settings. Should contact videos delivered online prove to be effective, for example, this would greatly improve community access to these brief interventions (Griffiths et al., 2014; Mehta et al., 2015).

Other strengths of this study include the randomized experimental design and the examination of intervention effects at post-test and after three weeks. Most of the

previous research on brief interventions for mental illness stigma has exclusively focused on immediate effects, which provides an incomplete view, particularly since the ultimate goal of stigma interventions is sustained change. Greater focus on the longer-term impact of brief interventions is needed. As such, researchers may want to more closely examine factors that predict significant longer-term effects.

Related to this call for a research shift towards longer-term outcomes, a final area of suggested study is the impact of exposure to negative perceptions about people with schizophrenia following participation in contact video interventions. This study's finding that there are fewer significant longer-term effects than immediate effects is unsurprising given that there is ample opportunity for people to be re-exposed to negative perceptions from daily interactions, news outlets, and social media, which can increase mental illness stigma (McGinty et al., 2013). More research is needed to understand how improvements in negative perceptions and reactions to people with schizophrenia can be better maintained despite expected re-exposures to negative perceptions and discrimination.

Conclusion

In conclusion, findings from the present study suggest that mental illness contact videos have the potential for small immediate effects on perceived dangerousness, social distance, belief in forced treatment, and negative emotions toward people with schizophrenia in a college-age population. Findings also suggest that contact videos have the potential for some longer-term effects, including reducing perceived dangerousness and belief in forced treatment. That many of these significant contact video effects disappear when an audio psychosis simulation is added has implications for stigma interventions that include simulation, such as the popular HVD workshop.

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Appendix A

Workshop Quiz

On "*The Post-Lecture Classroom: How Will Students Fare" by Robinson Meyer, The Atlantic* (SEP 13, 2013).

PLEASE READ THE ATTACHED ARTICLE AND RESPOND TO THE FOLLOWING QUESTIONS TO THE BEST OF YOUR ABILITY. Please circle the best answer. You have 5 minutes to complete this quiz.

1. What is a "flipped classroom"?
    a) The students take turns being the teacher and run a lecture
    b) The students watch lecture videos at home and do activities in class
    c) The students no longer have to attend a class and everything is online
    d) Classes are taught in abnormal settings (i.e. outside, at restaurants etc.)
2. Where was the first large-scale study examining student performance in a flipped classroom done?
    a) University of Maryland, Baltimore County
    b) University of Maryland, College Park
    c) University of Virginia
    d) University of North Carolina
3. What was taken out of the flipped classroom model because the student's did not like the activity?
    a) Final student presentations
    b) Video modules before class
    c) Multiple choice questions on previous night's lecture
    d) Completing activities in pairs
4. What type of design is used in this large-scale research study on flipped classrooms?
    a) Randomized Control Trial
    b) Meta-Analysis
    c) Single-Case
    d) Quasi-Experimental
5. How much did student performance improve from 2011 to 2013 on an identical final exam after implementing the flipped classroom?
    a) 2.6%
    b) 2.5%
    c) 5.1%
    d) 7%

6. True or False: While Dr. Mumper assigned more work, exit surveys showed students did the same amount of work to other classes, due to less cramming.
   a) True
   b) False
7. What were findings from the large-scale study on flipped classrooms? (Circle all that apply)
   a) Students preferred the flipped model to lecture model
   b) Teachers are no longer a necessary component to education
   c) Student performance on a final exam improved
   d) Flipped models require too much work from the students

Appendix B

Workshop Library Task

Participants were provided the following instructions and one of the following questions on an index card:

"Please walk to the library. Upon entering the library ask an employee at the circulation desk or reference desk your assigned question."

Questions:

"How late will the library be open today?"

"Where can I find the library media desk?"

"Where is the restroom?"

"How much is the photocopier per copy?"

"Is there a photocopier here that accepts credit cards?"

"Where can I find the serials desk?"

"Where can I check out headphones for the media workstations?"

"Where can I find the special collections room?"

"Where can I find the math lab?"

Appendix C

Attribution Questionnaire-27

Harry is a 30 year-old single man with schizophrenia. Sometimes he hears voices and becomes upset. He lives alone in an apartment and works as a clerk at a large law firm. He has been hospitalized six times because of his illness and receives outpatient mental health services.

CIRCLE THE NUMBER OF THE BEST ANSWER TO EACH QUESTION.

1. I would feel aggravated (or irritated) by Harry.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

2. I would feel unsafe around Harry.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

3. Harry would terrify me.

1	2	3	4	5	6	7	8	9
no, not at all								yes, very much

4. How angry would you feel at Harry?

1	2	3	4	5	6	7	8	9
no anger								very much anger

5. If I were in charge of Harry's treatment, I would require him to take his medication.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

6. I think Harry poses a risk to his neighbors unless he is hospitalized.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

7. If I were an employer, I would interview Harry for a job.

1	2	3	4	5	6	7	8	9
not likely								very likely

8. I would be willing to talk to Harry about his problems.

1	2	3	4	5	6	7	8	9
not likely								very likely

9. I would feel pity for Harry.

1	2	3	4	5	6	7	8	9
no, not at all								yes, very much

10. I would think that it was Harry's own fault that he is in the present condition.

1	2	3	4	5	6	7	8	9
no, not at all								yes, absolutely so

11. How controllable, do you think, is the cause of Harry's present condition?

1	2	3	4	5	6	7	8	9
not at all under personal control								completely under personal control

12. How irritated would you feel by Harry?

1	2	3	4	5	6	7	8	9
no irritation								very much irritation

13. How dangerous would you feel Harry is?

1	2	3	4	5	6	7	8	9
not at all dangerous								very much dangerous

14. Harry should be forced into treatment with his doctor even if he does not want to.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

15. I think it would be best for Harry's community if he were put away in a psychiatric hospital.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

16. I would be willing to share a car pool with Harry.

1	2	3	4	5	6	7	8	9
not likely								very likely

17. An asylum or institution, where Harry can be kept away from his neighbors, is the best place for him.

1	2	3	4	5	6	7	8	9
strongly disagree								strongly agree

18. I would feel threatened by Harry.

1	2	3	4	5	6	7	8	9

no, not at all yes, very much

19. How scared of Harry would you feel?

1	2	3	4	5	6	7	8	9
not at all scared								very much scared

20. How likely is it that you would help Harry (e.g., with small chores or favors)?

1	2	3	4	5	6	7	8	9
not at all likely								very likely

21. How certain would you feel that you would help Harry?

1	2	3	4	5	6	7	8	9
not at all certain								absolutely certain

22. How much sympathy would you feel for Harry?

1	2	3	4	5	6	7	8	9
none								very much

23. How responsible, do you think, is Harry for his present condition?

1	2	3	4	5	6	7	8	9
not at all responsible								absolutely responsible

24. How frightened of Harry would you feel?

1	2	3	4	5	6	7	8	9
not at all frightened								very frightened

25. If I were in charge of Harry's treatment, I would force him to live in a group home.

1	2	3	4	5	6	7	8	9
no, not at all								yes, absolutely

26. If I were a landlord, I probably would rent an apartment to Harry.

1	2	3	4	5	6	7	8	9
not at all likely								very likely

27. How much concern would you feel for Harry?

1	2	3	4	5	6	7	8	9
none								very much

Appendix D

Social Distance Scale

Based on your knowledge of people with schizophrenia, please rate the following statements. Assume the individuals with schizophrenia are receiving professional help in managing their illness.

1. How would you feel about renting a room in your home to someone with schizophrenia?

0	1	2	3
definitely willing			definitely unwilling

2. How would you feel about being a worker on the same job as someone with schizophrenia?

0	1	2	3
definitely willing			definitely unwilling

3. How would you feel about having someone with schizophrenia as a neighbor?

0	1	2	3
definitely willing			definitely unwilling

4. How would you feel about having a person with schizophrenia be the caretaker of your children for a couple of hours?

0	1	2	3
definitely willing			definitely unwilling

5. How would you feel about your children marrying someone with schizophrenia?

0	1	2	3
definitely willing			definitely unwilling

6. How would you feel about setting up a friend on a blind date with someone with schizophrenia?

0	1	2	3
definitely willing			definitely unwilling

7. How would you feel about recommending someone with schizophrenia for a job working for a friend of yours?

0	1	2	3
definitely willing			definitely unwilling

Appendix E

Participant Background Questionnaire

Are you male or female (please circle)? Male Female

What is your date of birth? (mm/dd/yyyy) _____/_____/_____

Please mark the box ☑ that describes your class standing:

□ Freshman □ Junior □ Other (explain)_____
□ Sophomore □ Senior

Are you Hispanic, Latino or of Spanish Origin? Please mark the box ☑ that describes your national origin:

□ Hispanic or Latino, Spanish Origin
□ Unknown whether Hispanic or Latino or of Spanish Origin
□ Not Hispanic or Latino, Not of Spanish Origin

Please mark <u>all</u> boxes ☑ that describe your race/ethnicity:

□ Asian □ Black or African-American □ Unknown
□ White or Caucasian □ Other Race or Ethnicity Not Listed

Are you planning to major in psychology? If No, what is your current or intended major?

□ Yes □ No, I'm majoring in _____ □ Undecided

More than 20% of young adults age 18-25 have at least one mental health problem. Many young adults also have close family members or friends with these concerns. *Please answer the following items to the best of your knowledge:*

In your lifetime, has a close friend or family member ever had a mental health problem for which professional help might have been useful or recommended?

□ Yes □ No

In your lifetime, have you ever had a mental health problem for which professional help might have been useful OR for which it was recommended?

□ Yes □ No

Have you ever received mental health services (therapy, counseling, or medication)?

□ Yes □ No

Has a close friend or family member ever received mental health services?

□ Yes □ No

Have you ever refused mental health services OR been too afraid or skeptical to seek help for mental health problems you had?

□ Yes □ No

Appendix F

Knowledge About Schizophrenia Test

This is a test of your knowledge about mental illness. Please select the **best answer** for each item below. The questions on the test are taken from findings of scientific research. You are not expected to have read the research reports, but by using your experience and general knowledge you should be able to pick out many correct answers. Some people will do much better than others because of their experience or because of their training. THERE IS NO PENALTY FOR GUESSING. There is no time limit for the completion of this test, but you should work as rapidly as you can.

1. Schizophrenia is most likely caused by:
   a) Brain problem
   b) Poor sense of self or weak personality
   c) Evil spirits
   d) Improper parenting

2. A common symptom of schizophrenia is:
   a) Violence, theft, or physical attacks toward others
   b) Having extra energy
   c) Overeating and weight gain
   d) Thinking that others are watching or following, or talking badly about you

3. The best person to decide if someone has schizophrenia is:
   a) Emergency room doctor
   b) Family member
   c) Psychiatrist/Psychologist
   d) School teacher or professor

4. With treatment, the most common outcome for schizophrenia is:
   a) Mild to moderate mental retardation
   b) Dementia or severe mental deterioration
   c) Some symptom improvement but they are unlikely to function well in everyday society
   d) Recovery: Significant symptom improvement but some risk for relapse

5. Medicines that are used for hearing voices are called:
   a) Antibiotics
   b) Anti-depressants
   c) Anti-psychotics
   d) Sedatives

6. To help deal with stress, most patients with schizophrenia benefit from:
   a) Alcohol use
   b) Counseling or psychotherapy
   c) Cutting back on social networks & activities
   d) Pain-relief medications

7. The cause of schizophrenia is *most strongly* related to:

a) Biology
b) Environment
c) Family
d) Personality
e) Society

8. A doctor usually makes a diagnosis of schizophrenia by a(n):
a) Blood test
b) CAT scan
c) Interview
d) Urine test

9. The best treatment for the hallucination & delusions of schizophrenia is:
a) Medicine
b) Brain operation
c) Seclusion and relaxation
d) Vitamins, minerals, or herbs

10. Of the following options, people with schizophrenia usually benefit most from:
a) Medium to long-term placement in a psychiatric hospital or institution
b) Physical exercise
c) Support from family/friends and low stress
d) Vitamins, minerals, or herbs

11. The symptoms of schizophrenia usually begin in which stage of life?
a) As a baby
b) Elementary school years
c) Late teen-age years or young adulthood
d) 35–50 years old
e) 60–70 years old

12. Which of the following is one of the new "atypical" medicines for schizophrenia?
a) Chlorpromazine (Thorazine)
b) Haloperidol (Haldol)
c) Fluphenazine (Prolixin)
d) Trifluoperazine (Stelazine)
e) Quetiapine (Seroquel)

13. After brief hospitalization for stabilization following a crisis, most patients with schizophrenia would benefit most from:
a) Constant observation at home by family
b) Inpatient stay in a nursing home or extended care facility
c) Weekly follow-up with an outpatient psychiatrist/psychologist
d) Leaving school or quitting their job

Appendix G

Level of Contact Report

Please read each of the following statements carefully. **Place a check by EVERY statement that represents your experience with people who have experienced PSYCHOSIS.** Psychosis is a common symptom of schizophrenia, schizoaffective disorder, and bipolar disorder. It is a temporary mental state often characterized by hallucinations and confused thinking about what is real versus imagined.

1. ____ I have watched a movie or television show in which a character depicted had psychosis or a disorder characterized by psychosis

2. ____ I have provided, as a volunteer, intern or worker, services/treatment for people with disorders characterized by psychosis

3. ____ I have observed, in passing, a person I believe may have had psychosis or a disorder characterized by psychosis

4. ____ I have observed people with psychosis, or disorders characterized by psychosis, on a frequent basis

5. ____ I have experienced psychosis

6. ____ I have worked or been in a class with a person who has experienced psychosis

7. ____ I have never observed a person that was experiencing psychosis or who likely had a disorder characterized by psychosis

8. ____ A friend of the family has experienced psychosis or a disorder characterized by psychosis

9. ____ I have a relative who has experienced psychosis or a disorder characterized by psychosis

10. ____ I have watched a documentary on television about person(s) who have experienced psychosis or a disorder characterized by psychosis

11. ____ I live with a person who has experienced psychosis or a disorder characterized by psychosis