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# The Relationship Between Mental Disorder Stigma Interventions and Individual Differences

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UNIVERSITY OF CALGARY

The Relationship Between Mental Disorder Stigma Interventions and Individual Differences

by

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A THESIS

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## Abstract

The present study examined the relationship between individual differences and mental disorder stigma ratings prior to an intervention, as well as directly following and one week after a mental disorder stigma intervention took place. A knowledge-based anti-stigma intervention and a contact-based anti-stigma intervention were also compared to a control group, in order to determine whether these relationships between stigma and individual difference variables would vary based on the type of intervention provided. Data was collected from 152 post-secondary students on their ratings of the HEXACO personality inventory, modern prejudice towards individuals with mental illnesses, intergroup anxiety, empathy, perspective taking, Right Wing Authoritarianism, Social Dominance Orientation, and mental disorder stigma. Results indicated that mental disorder stigma was related to each of the individual difference variables prior to participants receiving the intervention. Changes in mental disorder stigma ratings directly following the anti-stigma interventions, as well as one week later suggest that individual differences may play a role in the type of mental disorder stigma interventions that are most effective for different individuals. These findings and their implications for future research are discussed.

Keywords: *mental disorder stigma, anti-stigma interventions, individual differences, HEXACO personality, modern prejudice, intergroup anxiety, empathy, perspective taking, right wing authoritarianism, social dominance orientation*

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## **Introduction**

Stigma has been defined as the co-occurrence of labelling, stereotyping, separation, status loss, and discrimination believed to take place when there is a power differential between the stigmatized and stigmatizing group (Link & Phelan, 2001). Individuals with mental disorders often experience stigma, which can lead to lowered self-esteem, social rejection, and hesitancy to seek treatment (Corrigan, 2004; Corrigan & Watson, 2002; Hinshaw, 2009; Thornicroft, 2006). In addition, research has shown that in the workplace those with mental illnesses experience significantly lower wages and employment rates than those without mental illnesses or those who have physical disorders (Baldwin, 1999). These wage and employment differentials put individuals with mental illnesses at a disadvantage to their peers, and this disadvantage is likely caused by stigma and discrimination (Baldwin & Marcus, 2011). Furthermore, public stigma (i.e., being stigmatized by the general public) often results in an ‘us’ versus ‘them’ form of labelling, which implies that those with mental illnesses are fundamentally dissimilar to ‘us’ (where ‘us’ represents those without mental illnesses). This labelling often leads to self-stigma, which takes place when individuals who are in the stigmatized group internalize these perceptions and form stigmatizing attitudes towards themselves, which further reduces their willingness to seek treatment (Rusch, Angermeyer, & Corrigan, 2005). In fact, one of the most concerning aspects of living with a mental illness are the barriers and discrimination created by stigma (Szeto & Dobson, 2010), as the fear of being stigmatized is often a key reason why individuals who live with a mental illness will not pursue treatment (Overton & Medina, 2008).

The impact that public- and self-stigma have on help seeking contributes to a significant financial impact for the Canadian economy. Within Canada, mental illnesses have contributed to lost productivity amounting to about \$4.5 billion annually (Stephens & Joubert, 2001). Since

30% of all Canadian work related disability claims are due to mental illnesses, this has resulted in climbing costs that are nearing \$30 billion a year. In total, the overall estimated economic cost due to poor mental health in Canada is around \$51 billion annually (Lim, Jacobs, Ohinmaa, Schopflocher, & Dewa, 2008). One of the key solutions aimed at reducing these costs is to encourage and support employees to engage in help seeking behaviors in order to improve their mental health, feel empowered, and reduce self-stigma (Rusch et al., 2005).

In recognition of these concerns, the Mental Health Commission of Canada (MHCC) has adapted and promoted anti-stigma intervention workshops to aid in reducing mental disorder stigma within the workplace. The MHCC has been working with groups such as healthcare providers, police services, firefighters, and paramedics across Canada, using a contact-based education program, where individuals with lived experience of mental illnesses discuss their stories and the recovery process (Modgill, Patten, Knaak, Kassam, & Szeto, 2014; Stuart et al., 2014a). This method of reducing prejudice by increasing intergroup contact is used by multiple stigma intervention programs, and was first introduced by Allport (1954), when he proposed the Intergroup Contact Hypothesis. Intergroup contact takes place when interpersonal contact is made between an 'in-group' and an 'out-group,' where the in-group has a tendency to discriminate against the out-group members. The goal of intergroup contact is to reduce this discrimination by bringing these groups together, or connecting them in some way. Allport suggested that intergroup contact would result in positive outcomes when the situation held the following four key conditions: equal group status within the situation; common goals; intergroup cooperation; and support from authorities, laws or customs. Pettigrew's (1998) reformation of Intergroup Contact Theory suggested that in addition to these situational conditions, the outcomes of intergroup contact would also be impacted by individual differences, as these

differences may alter how likely an individual is to experience prejudice reduction over time. While the anti-stigma programs that are employed by the MHCC throughout Canada have provided the four conditions outlined by Allport during their interventions, and have shown promising results in stigma reduction thus far (Modgill et al. 2014; Stuart et al., 2014b), no research has examined the role that individual differences may play in improving the effectiveness of these anti-stigma interventions, as suggested by Pettigrew. Therefore, the purpose of the present study is as follows: 1) to replicate previous research by examining the relationship between stigma and individual differences pertaining to personality, intergroup anxiety, empathy, perspective taking, and modern prejudice towards people with mental illnesses. Whereas previous research has used the Five Factor Model to examine this relationship, the current study will extend this research by employing the HEXACO model. The present study will also extend previous research by 2) examining the impact that personality and the other aforementioned individual differences will have on intervention effectiveness overall, 3) exploring whether a potential interaction exists between these individual differences and the type of anti-stigma intervention that is most effective by comparing the outcomes of a contact-based, knowledge-based, and control group intervention, and 4) investigating the potential mediating role of Social Dominance Orientation and Right Wing Authoritarianism on the outcomes of these anti-stigma interventions.

### **Intergroup Contact Theory**

In order to examine the relationships between individual differences and anti-stigma interventions, the current study will draw on Pettigrew's reformation of Intergroup Contact Theory (Pettigrew, 1998). Pettigrew's reformed contact theory expands upon Allport's Intergroup Contact Hypothesis (1954), which suggest that contact with stigmatized individuals

will have positive outcomes when the following four conditions are met: equal status of groups within the intergroup situation; common goals between the groups; intergroup cooperation; and support from authorities, customs or laws.

While there was some initial evidence to support Allport's theories (Brophy, 1945; Deutsch & Collins, 1951; Sims & Patrick, 1936), and his hypotheses regarding these four key conditions (Anderson, 1994; Bornman & Mynhardt, 1991; Herek & Capitanio, 1996; McKay & Pitman, 1993; Smith, 1994), Pettigrew (1998) highlights some potential problems with Allport's original hypothesis. One such problem is that Allport does not give any indication of how the effects of intergroup contact will generalize beyond the initial intergroup contact situation. Pettigrew argues that researchers need to examine the long-term outcomes of contact, in order to understand whether it will provide broad and lasting consequences.

In light of these concerns, Pettigrew (1998) provided a reformulation of Intergroup Contact Theory, in which he argues that four processes are involved in the reduction of intergroup prejudice. In addition, instead of a list of conditions, Pettigrew proposes a longitudinal model that involves the following four processes that take place over time: Essential and Facilitating Situational Factors, Initial Contact, Established Contact, and the creation of a Unified Group. In addition to these time latent processes, Pettigrew also suggests in his Intergroup Contact Theory that participants' experiences and characteristics will impact how these three levels of contact unfold over time. Therefore, instead of just examining how situational factors would impact intergroup contact (as proposed by Allport), Pettigrew expands his model to explain that individual differences will likely impact Initial Contact, Established Contact, and the formation of a Unified Group. This portion of Pettigrew's theory is the focus of the currently proposed study, and is based on the argument that an individual's previous attitudes

and experiences will impact their willingness to engage in intergroup contact, and the outcomes of that contact. However, little empirical evidence currently exists to examine the relationship between individual differences and prejudice reduction due to intergroup contact, and this research is especially deficient in the field of mental disorder stigma. As a result, the current research will aid in providing evidence regarding this portion of Pettigrew's model, by examining the impact of individual differences on mental disorder stigma reduction via a contact-based intervention. The present study will also expand upon this model by examining whether individual differences will impact the effectiveness of intergroup contact, as compared to a knowledge-based intervention.

### **The HEXACO Model of Personality**

The model used to measure personality in previous studies investigating stigma was the Five Factor Model of personality (also known as the Big Five), which claims that a vast array of human personality traits can be effectively summarized by five independent dimensions of personality, known as Neuroticism, Openness to Experience, Extraversion, Agreeableness, and Conscientiousness (Costa & McCrae, 1995). The present study aims to expand upon this research by investigating mental disorder stigma and anti-stigma interventions within the HEXACO model of Personality (Ashton & Lee, 2007). The six dimensions that compose the HEXACO model are as follows: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (Lee & Ashton, 2004). The key difference between the Five Factor Model (FFM) of personality and the HEXACO model of personality is HEXACO's addition of a sixth dimension, labelled as Honesty-Humility (Lee & Ashton). Research that has compared HEXACO to the FFM has found that the six HEXACO factors are more widely replicable across different languages than the five factors in the FFM (Ashton &

Lee, 2007). In addition, the HEXACO model describes some personality phenomenon more effectively than the FFM, such as sex differences in personality traits (Ashton & Lee, 2007). As a result, HEXACO is one of the key features of the present study, as it will likely provide an increased understanding of the relationship between personality traits and mental disorder stigma.

### **Stigma and Individual Differences**

**Stigma and Personality.** Mental disorder stigma refers to stigmatization towards those with mental illnesses, and is composed of the stereotypes, prejudice and discrimination that are involved in these stigmatizing attitudes and behaviours (Szeto, O'Neill, & Dobson, 2015). While little research currently exists on the relationship between personality traits and stigma, there has been some evidence that low levels of Openness and Agreeableness from the Five Factor Model of personality are correlated with racial prejudice (Graziano, Bruce, Sheese, & Tobin, 2007), general prejudice (Ekehammar & Akrami, 2003, 2007), and mental disorder stigma (Brown, 2012). In addition, in their exploratory analysis, Szeto et al. found further support that Openness and Agreeableness were correlated with mental disorder stigma. The notion that Openness and Agreeableness would be related to lower levels of stigma (or vice versa) also makes sense from a theoretical perspective. Openness within the Big Five model refers to being open minded, adventurous and somewhat liberal in one's thoughts, ideas or beliefs. Agreeableness describes an individual's concern with their interpersonal or social relationships, and includes measurements of cooperation, altruism, and sympathy. Therefore, it is not surprising that these personality variables have appeared to play a role in stigmatizing attitudes and beliefs in previous research.

While no studies appear to have examined how stigma relates to the personality traits of Agreeableness and Openness within the HEXACO model of personality, the Openness variable

in particular is somewhat similar to Openness as described in the Five Factor Model (Ashton & Lee, 2007), and would likely yield similar results. Within the HEXACO-PI, the Openness to Experience factor is made up of the following four facets: Aesthetic Appreciation, Inquisitiveness, Creativity, and Unconventionality. HEXACO describes Openness to Experience as a personality trait that encompasses an individual's interest in seeking out new information, being innovative and open to original thought, and a tendency to accept that which is considered unusual (Lee & Ashton, 2004). Therefore, as a similar measurement of Openness has been found to negatively correlate with stigma and prejudice in past research (Brown, 2012; Ekehammar & Akrami 2003, 2007; Szeto et al., 2015), and Openness to Experience generally involves a willingness to be interested in new information and ideas, as well as receptive to that which is considered unconventional, the following is hypothesized:

*Hypothesis 1a:* Openness to Experience will be negatively correlated with Mental Disorder Stigma.

In comparison to Openness, Agreeableness within the HEXACO-PI is somewhat dissimilar to that described in the Five Factor Model (Ashton & Lee, 2007). HEXACO breaks Agreeableness down into four facets, which include Forgiveness, Gentleness, Flexibility and Patience. This model also describes Agreeableness as reflecting an individual's tendency to be good-natured, tolerant, compromising, and lenient in judging others (Lee & Ashton, 2004). Therefore, due to the tendency for those who are high in Agreeableness to be less judgmental, more willing to cooperate, and more flexible in their opinions, it is proposed that these individuals will be less stigmatizing than those who are low in Agreeableness. As a result, while Agreeableness within the HEXACO model may not be reflecting the same traits as

Agreeableness within the FFM, similar results to those found by Szeto et al. (2015) will likely be seen. This reflects the second portion of the first hypothesis:

*Hypothesis 1b:* Agreeableness will be negatively correlated with Mental Disorder Stigma.

While Agreeableness and Openness within the FFM appear to have some empirical support in their relationship with stigma and prejudice, very little information is available regarding the role that the personality traits of Conscientiousness, Emotionality, and Honesty-Humility (H-H) play when it comes to stigma. In one study, Szeto et al. (2015) did find evidence that Conscientiousness and Honesty-Humility are correlated with mental disorder stigma, but no further studies exist that have replicated these results. In addition, no studies to date have examined the relationship between stigma and the personality trait of Emotionality, as measured by the HEXACO-PI. The current study will attempt to replicate the findings of Szeto et al. regarding Conscientiousness and H-H, in order to provide further evidence of these relationships, and also to extend these findings by examining Emotionality as it relates to mental disorder stigma.

When examining Conscientiousness as defined by the HEXACO-PI, this variable is conceptualized as the combination of the following four facets: Organization, Diligence, Perfectionism, and Prudence. Individuals high in Conscientiousness are described as being motivated to achieve, having a preference for structure and order in their tasks, being heavily focused on details, and deliberating carefully without making impulsive decisions (Lee & Ashton, 2004). Therefore, as these individuals are likely to think things through logically and weigh opinions carefully when making decisions (as opposed to acting on impulse), they may be less likely to make snap decisions about others based on discrimination. In addition, they may be more diligent and motivated to learn about those with mental illnesses, and therefore be less



inclined to engage in mental disorder stigma. Furthermore, Conscientiousness within HEXACO is almost identical to the Conscientiousness dimension within the Five Factor Model, which was found to be significantly negatively correlated with mental disorder stigma in Szeto et al.'s (2015) study. This leads to the third portion of the first hypothesis:

*Hypothesis 1c:* Conscientiousness will be negatively correlated with Mental Disorder Stigma.

The Honesty-Humility dimension of HEXACO is composed of the facets Sincerity, Fairness, Greed Avoidance and Modesty. H-H reflects individuals' orientation towards being genuine (as opposed to manipulative) and fair in their social interactions, and the degree to which they are motivated by wealth and social status, or feel that they are entitled compared to others (Lee & Ashton, 2004). Therefore, individuals who are low in H-H are more likely to take advantage of others, be insincere, and feel that certain individuals deserve poorer treatment in comparison to them. These traits are likely tied to stigmatizing behaviors, as was found in previous research conducted by Szeto et al. (2015) and Sibley, Harding, Perry, Asbrock, & Duckitt (2010).

Although no studies appear to have examined mental disorder stigma in relation to the HEXACO model of personality, Szeto et al. (2015) did include the Honesty-Humility (H-H) factor in their study examining the FFM, and found that those lower in H-H were more likely to engage in mental disorder stigma. In addition, research examining H-H and prejudice found similar negative correlations (Sibley et al., 2010). Furthermore, low H-H has been found to correlate with Social Dominance Orientation and Self-Enhancement (versus Self-Transcendence), which are related to increased prejudice (Lee, Ashton, Ogunfowora, Bourdage, & Shin, 2010). It is important to examine the relationship between H-H and mental disorder

stigma within the framework of HEXACO specifically, as some variance in the Honesty-Humility dimension is not adequately represented in the FFM factors. Therefore, by examining these relationships using the HEXACO-PI, it will allow for a more straightforward interpretation of these findings and their potential impact on stigma. As a result, the following is hypothesized:

*Hypothesis 1d:* Honesty-Humility will be negatively correlated with Mental Disorder Stigma.

As previously mentioned, while the above four hypothesized relationships have been examined in prior studies, no research has examined how stigma relates to the HEXACO-PI's measure of Emotionality. HEXACO Emotionality consists of Fearfulness, Anxiety, Dependence, and Sentimentality. This factor assesses how emotionally attached and empathically concerned people are for other individuals, and how much they appreciate having emotional support systems (Lee & Ashton, 2004). Therefore, it is suggested that higher levels of Emotionality will be related to lower levels of mental health stigma, as these individuals will be more likely to empathize with, and feel emotionally attached to those who are suffering from mental illness. This is reflected in the final portion of the first hypothesis:

*Hypothesis 1e:* Emotionality will be negatively correlated with Mental Disorder Stigma.

**Stigma and Modern Prejudice.** In their study, Szeto and colleagues (2015) adapted the Modern Racism Scale (McConahay, 1986) to examine the following three concepts that concern those with mental illnesses: denial of continued discrimination, antagonism toward demands by those with mental illnesses, and resentment regarding special treatment for those with mental illnesses. This Modern Prejudice Towards People with Mental Illnesses Scale was created to assess more subtle feelings of anger, resentment, or bitterness that individuals may not be comfortable expressing overtly, as they may feel it is socially undesirable to direct blatant

prejudice towards those with mental illnesses. Similar to the Modern Racism Scale, modern prejudice towards people with mental illnesses is meant to measure less overt forms of discrimination that may be considered more acceptable by the general public, and therefore endorsed by stigmatizing individuals. In using this scale, Szeto et al. found that modern prejudice towards people with mental illnesses did appear to correlate with, and predict, mental disorder stigma within their sample. Therefore, in an aim to better understand this measurement, and to replicate Szeto et al.'s results, the following is hypothesized:

*Hypothesis 2a:* Modern Prejudice towards people with mental illnesses will be positively correlated with Mental Disorder Stigma.

**Stigma, Empathy, Perspective Taking, and Intergroup Anxiety.** While modern prejudice towards people with mental illnesses is likely positively correlated with mental disorder stigma, it is also likely that there are individual differences that could be negatively correlated with this stigma, such as empathy and perspective taking. Unlike personality traits, which are considered to be relatively stable throughout adulthood, individual differences related to state levels of empathy and perspective taking towards stigmatized groups may be more malleable (Pettigrew & Tropp, 2006; Todd, Bodenhausen, Richeson, & Galinsky, 2011). As explained by Pettigrew (1998) in his Intergroup Contact Theory, having contact with those who are part of a stigmatized group can increase an individual's feelings and perceptions of that group, and therefore enhance the empathy that they feel and decrease the prejudice that they hold towards those who are stigmatized. These ideas have since been examined using empirical evidence, which has found that intergroup contact can significantly reduce prejudices towards various stigmatized groups, such as ethnic minorities, homosexuals, and those with mental illnesses (Pettigrew & Tropp, 2006). Furthermore, research conducted by Todd et al. (2011)

determined that when individuals adopted the perspective of an out-group member, their interactions with individuals from these groups yielded more positive evaluations of, and behaviors towards the target group.

It has also been suggested that the level of anxiety that individuals have towards a particular group can be altered, as research has found that individual differences in intergroup anxiety can be improved by increasing contact with stigmatized group members (Stephan & Stephan, 1992; Turner, Hewstone, & Voci, 2007). Furthermore, there has been physiological evidence that when people engage in intergroup contact they experience lower levels of physiological arousal, which is linked to lower levels of prejudice (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Page-Gould, Mendoza-Denton, & Tropp, 2008). Building upon these results, Szeto et al. (2015) examined whether levels of stigma towards those with mental illnesses would be related to individual differences in intergroup anxiety, empathy and perspective taking. In line with their hypotheses and the outcomes of previous research, the authors found that lower levels of intergroup anxiety, higher levels of empathy, and the ability to take on another person's perspective, related to lower mental disorder stigma. Therefore, as Szeto et al.'s study was the first to examine the relationship between these individual differences and mental disorder stigma specifically, the following is hypothesized in an attempt to replicate these results:

*Hypothesis 2b:* Empathy will be negatively correlated with Mental Disorder Stigma.

*Hypothesis 2c:* Perspective Taking will be negatively correlated with Mental Disorder Stigma.

*Hypothesis 2d:* Intergroup Anxiety will be positively correlated with Mental Disorder Stigma.

## **Anti-Stigma Interventions and Individual Differences**

While it is advantageous to understand how individual differences relate to stigma, it is arguably of further importance to examine how individuals who are engaging in stigma will react to anti-stigma interventions. With organizations across the globe such as the Mental Health Commission of Canada, the Mental Health Awareness in Action Program (England) and the California Mental Health Services Authority implementing stigma and discrimination reduction programs, additional knowledge regarding the effectiveness of these anti-stigma interventions is necessary. One way to examine the utility of these interventions is to gain a better understanding of the individuals who are taking part in these workshops, and how their individual differences may impact the degree to which their levels of stigma are reduced.

As proposed by Allport (1954) and Pettigrew (1998), many of the anti-stigma programs in use in various countries are employing what is known as a contact-based intervention strategy, in order to reduce prejudice towards those with mental illnesses. In a meta-analysis conducted by Corrigan, Morris, Michaels, Rafacz, and Rusch (2012), the authors found that while both education-based and contact-based interventions reduced stigma for all age groups, the contact-based approach was the most effective form of intervention for adults. These findings support Pettigrew's (1998) Intergroup Contact Theory, which suggests that contact with individuals from a stigmatized group will lead to change through the following four processes: learning about the out-group, changing behavior, generating affective ties, and in-group reappraisal. Pettigrew also theorized that peoples' experiences and characteristics would impact how they are affected by intergroup contact overtime, and that one of the key components of determining the outcomes of contact are individual differences. However, while some studies have examined how individual differences relate to baseline measures of prejudice and stigma (Pettigrew & Tropp, 2008;

Pettigrew, Tropp, Wagner, & Christ, 2011; Szeto et al., 2015; Todd, Bodenhausen, Richeson, & Galinsky, 2011), little empirical evidence exists to support the notion that these individual differences will influence *changes* in stigma due to intergroup contact. Therefore, the current study intends to remedy this gap in the literature by testing Pettigrew's theory that differences in individual traits will impact the degree to which stigma decreases following a contact-based intervention.

More specifically, it is proposed that stigma will not only be positively correlated with intergroup anxiety and modern prejudice towards those with mental illnesses, and negatively correlated with Openness, Agreeableness, Conscientiousness, Honesty-Humility, Emotionality, empathy and perspective taking, but also that the amount of stigma reduction after an intervention will be related to these individuals difference variables. As previously mentioned, individuals high in Openness tend to be interested in seeking out new information, and being open to new ideas and perspectives (Lee & Ashton, 2004). This suggests that participants high in Openness to Experience may be more receptive towards the information presented during the mental disorder stigma intervention, and therefore more likely to show reductions in stigma. Similarly, individuals high in Agreeableness tend to be more flexible in their opinions, and less judgmental towards other (Lee & Ashton, 2004). As a result of their willingness to adapt and be open to the opinions of others, individuals high in Agreeableness may be more likely to be positively impacted by the ideas, opinions, and facts presented during the stigma interventions.

In regards to Conscientiousness, since individuals high in this personality trait are achievement-oriented and tend to seek out applicable information when making decisions (Lee & Ashton, 2004), those high in Conscientiousness may feel motivated to be good participants and focus on the details and information provided during the interventions, allowing them to be

further impacted and likely to make informed decisions regarding mental disorder stigma following the intervention. In addition, those who are high in Honesty-Humility may also be more impacted by the mental disorder stigma interventions. This is based on the notion that individuals high in H-H tend to support fairness in their social interactions, and do not feel entitled or motivated by social status in the same way that those who are low in H-H do (Lee & Ashton, 2004). As a result, these individuals may be more open to ideas regarding equality and fair treatment of individuals who have mental illnesses that are presented during the interventions.

Lastly, those high in Emotionality may show more stigma reduction following the interventions, as Emotionality is linked to emotional attachment and empathic sensitivity towards others (Lee & Ashton, 2004). This suggests that these individuals may be likely to empathize with the information that is discussed during the interventions regarding mental illnesses and the negative impact that stigma can, which may result in them being further impacted by these interventions. Therefore, it is hypothesized that individuals high in Openness, Agreeableness, Conscientiousness, Honesty-Humility and Emotionality will have greater levels of stigma reduction following the mental disorder stigma interventions. This is reflected in the third hypothesis:

*Hypothesis 3:* The HEXACO personality traits of (a) Openness, (b) Agreeableness, (c) Conscientiousness, (d) Honesty-Humility, and (e) Emotionality will lead to significant reductions in mental disorder stigma following a stigma intervention.

It is also proposed that individuals high in intergroup anxiety and modern prejudice towards people with mental illnesses, and low in empathy and perspective taking will experience less stigma reduction, as these individual differences have been previously linked to higher levels

of stigma and prejudice in past research (Pettigrew & Tropp, 2008; Pettigrew et al., 2011; Szeto et al., 2015; Todd et al., 2011). Furthermore, those who are high in Modern Prejudice towards people with mental illnesses are more likely to endorse less overt or blatant prejudice towards these individuals (Szeto et al.). As a result, they may believe that they are not stigmatizing, when in fact they do support prejudiced ideas towards those with mental illnesses (for example, endorsing the belief that discrimination against people with mental illnesses is no longer a problem in Canada, and therefore does not need to receive the same level of attention or resources). These less overt forms of prejudice may make it difficult for the anti-stigma interventions to have as much of an impact on these individuals, and as a result, those high in Modern Prejudice may show fewer reductions in stigma following the interventions. Similarly, individuals who have high levels of intergroup anxiety towards those with mental illnesses may be less open to the idea of learning about or engaging with those who have mental illnesses, and may be less impacted by the interventions as a result.

In comparison, individuals high in Empathy and Perspective Taking tend to be capable of relating to others, feeling connected to others, and being willing to see things from another person's perspective (Davis, 1980; 1983). As a result, individuals high in these traits will likely be able to connect more with the content provided during the mental disorder stigma interventions, and therefore show greater reductions in this stigma. Consequently, the fourth hypothesis is as follows:

*Hypothesis 4:* Low levels of (a) Intergroup Anxiety, and (b) Modern Prejudice towards people with mental illnesses, and high levels of (c) Empathy, and (d) Perspective Taking will lead to significant reductions in mental disorder stigma following a stigma intervention.



## **Contact vs. Knowledge Based Interventions**

In a meta-analysis conducted by Corrigan et al. (2012), the authors examined and compared the effectiveness of both the educational and contact-based approaches to reducing public stigma of those with mental illnesses. Within this analysis, the authors described educational approaches to stigma reduction as those that replaced inaccurate stereotypes regarding mental illnesses with factual information. In other words, this method is based on debunking myths regarding mental illnesses by providing statistics and facts. In comparison, contact-based stigma reduction is based on the ideas proposed by Allport (1954) and Pettigrew (1998), and involves interpersonal contact with those who are part of the stigmatized group. This form of intervention is founded on research that has shown how intergroup contact with individuals who have mental illnesses will reduce prejudice and discrimination towards these stigmatized individuals (Corrigan, 2005). The outcomes of Corrigan et al.'s meta-analysis found that while both forms of intervention significantly reduced stigma towards those with mental illnesses, contact-based interventions yielded significantly stronger results for adults, as compared to education-based interventions. Considering these results, the following fifth hypothesis is proposed:

*Hypothesis 5:* Overall, the contact-based anti-stigma interventions will result in the largest reductions in Mental Disorder Stigma, the knowledge-based anti-stigma intervention will result in the second largest reductions in this stigma, and the control group will have the lowest reductions in this stigma.

The present study intends to both replicate and expand upon Corrigan's (2005) findings by examining whether the outcomes of contact and knowledge-based interventions can be impacted by individual differences. As suggested by Pettigrew (1998) in his Intergroup Contact

Theory, individual differences will likely impact the degree to which intergroup contact is effective at reducing prejudice towards stigmatized groups. In agreement with Pettigrew's hypothesis, the current study proposes that certain individuals may be more adept at engaging in contact-based interventions, and may differ in the degree to which they are impacted by intergroup contact. Building upon this, it is likely that certain individuals are more strongly impacted by a form of intervention that is heavily focused on statistics and facts (i.e., a knowledge-based intervention), as opposed to the emotional and empathetic appeal that is linked to contact-based intervention. This suggests that while results show that contact-based interventions are more effective at reducing mental disorder stigma generally, individual differences may impact how people react to either contact-based or knowledge-based interventions.

It is important to examine the potential moderating role of individual differences in stigma reduction, as many of the anti-stigma interventions currently being conducted in Canada are based on the contact approach (Modgill et al., 2014; Stuart et al., 2014a), and there may be a sub-group of individuals who would be more positively impacted by knowledge-based interventions, that are presently being overlooked. Therefore, by exploring the potential interaction that exists between anti-stigma intervention type and mental disorder stigma outcomes based on individual differences, the results from the current study may be used to improve intervention efficacy and efficiency, or inform the development of new workplace anti-stigma interventions.

In order to examine this relationship between individual differences and intervention type, the present research will compare the outcomes of a contact-based intervention and a knowledge-based intervention, to a control-group, to determine whether the results of these

interventions are moderated by individual differences. As this topic has not been examined in any way prior to this study, our analyses will be exploratory. On the one hand, individuals high in Emotionality may have more success with contact-based anti-stigma programs, as Emotionality is linked to emotional attachment and empathic sensitivity towards others (Lee & Ashton, 2004), and contact-based education is focused on appealing to these emotions. Similar reasoning suggests that individuals high on empathy and perspective taking would also be more strongly influenced by contact-based interventions, as contact experiences are expected to increase individuals' emotional understanding of the stigmatized group, and therefore enhance empathetic feelings (Pettigrew et al., 2011). As a result, individuals who are prone to engaging in empathy and perspective taking may show higher levels of mental disorder stigma reduction due to contact-based interventions, as compared to knowledge-based interventions. On the other hand, individuals high in Emotionality, empathy, and perspective taking may already have low levels of mental disorder stigma prior to the intervention, and therefore they may be less impacted by stigma interventions overall.

It is also possible that individuals high in Conscientiousness will be more successful with knowledge-based interventions that emphasize facts, figures and information, as those who are high in Conscientiousness tend to seek order, prefer structured approaches to tasks, and make their decisions based on careful deliberation of the information that they have, as opposed to acting on emotional impulses (Lee & Ashton, 2004). This outcome seems increasingly likely if individuals are also low on Emotionality, empathy and perspective taking, as these individuals may struggle to create the necessary emotional bonds during intergroup contact, and may be more receptive to facts and statistics. Conversely, since the same amount of information is presented in both interventions, just with different styles, individuals high in Conscientiousness

may be more likely to have reduced mental disorder stigma following both interventions.

Therefore, the following research question is proposed:

*Research Question:* Does an interaction occur between the anti-stigma intervention type and the levels of the individual difference variables, such that the contact-based anti-stigma intervention or the knowledge-based anti-stigma intervention will result in higher or lower levels of Mental Disorder Stigma reduction for individuals who are high in (a) Emotionality, (b) Empathy, (c) Perspective Taking, and (d) Conscientiousness compared to their low counterparts.

### **The Mediating Role of Right Wing Authoritarianism and Social Dominance Orientation**

Two additional individual difference variables that likely have the potential to impact mental disorder stigma are Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO). Individuals high in RWA are described as conventional, endorsing conservative values, acting submissive to those in positions of authority, and engaging in aggression towards out-groups (Altemeyer, 1981, 1988). Comparatively, SDO is defined as the extent “...to which one desires that one’s ingroup dominate and be superior to outgroups” (Pratto et al., 1994, p. 742). Individuals high in SDO often support group hierarchy as opposed to group equality, where one group is viewed as being superior to the other (Pratto et al., 1994).

Previous research has shown that RWA and SDO are correlated with both the Big 5 and HEXACO personality traits (Ekehammar, Akrami, Gylje, & Zakrisson, 2004; Heaven & Bucci, 2001; Hodson, Hogg, & MacInnis, 2009; Lee et al., 2010; Lippa & Arad, 1999; Sibley et al., 2010). However, when examining research conducted specifically with the HEXACO model of personality there are few studies, and the results appear somewhat mixed. For instance, Sibley et al. (2010) found that SDO was significantly negatively correlated with Honesty-Humility,

Emotionality, Conscientiousness and Openness to Experience, while RWA had a significant negative correlation with Openness to Experience, but significant positive relationships with Honesty-Humility, Emotionality, and Agreeableness. In comparison, when observing the results from both their Canadian and American samples, Lee et al. (2010) found SDO to be negatively related to Honesty-Humility, Emotionality, Agreeableness, and Openness to Experience. In addition, they found RWA to be negatively related to Openness to Experience, but did not find the same significant positive relationship between RWA and Honesty-Humility, Agreeableness or Emotionality. Therefore, more research examining the relationships between RWA, SDO, and HEXACO personality traits is warranted, in order to gain a clearer understanding of which personality traits are correlated with RWA and SDO.

In addition, RWA and SDO have been established as well known predictors of prejudice and negative attitudes towards various outgroups (Cantal, Milfont, Wilson, & Gouveia, 2014; Duckitt, 2001; Ekehammar et al., 2004; Sibley & Duckitt, 2008; Whitley, 1999). However, while SDO and RWA are both strong predictors of prejudice, they tend to be low or moderately correlated with one another (Altemeyer, 1998; Duriez & Van Hiel, 2002; Sidanius & Pratto, 1999; Whitley, 1999), suggesting that they explain distinct portions of the variance in prejudice. Furthermore, RWA and SDO have been described as being part of a dual-process model of prejudice, where RWA and SDO are viewed as social attitudes that mediate the relationship between personality and prejudice (Duckitt, 2001; Sibley & Duckitt, 2008). In support of this model, research conducted by Sibley et al. (2010), Hodson et al. (2009), and Ekehammar et al. (2004) found RWA and SDO to mediate the relationship between personality variables and various forms of prejudice. Therefore, it is proposed that in the current study similar relationships will take place, such that SDO and RWA will mediate the relationship between our

proposed HEXACO personality variables (i.e., Honesty-Humility, Emotionality, Agreeableness, Conscientiousness, and Openness to Experience) and mental disorder stigma. However, based on the inconsistencies found in previous research examining RWA, SDO and HEXACO, only those relationships that were found to be significant in both studies will be predicted (i.e., the relationships between SDO and Honesty-Humility, Emotionality and Openness, as well as RWA's relationship with Openness), and exploratory analyses will be used to examine the relationships between the remaining personality traits, RWA and SDO. In addition, these relationships will be examined with mental disorder stigma before the stigma intervention takes place, as well as after the intervention (i.e., in relation to the amount of stigma reduction). These ideas are reflected in my final hypotheses:

*Hypothesis 6:* Social Dominance Orientation will be negatively correlated with the HEXACO personality traits of (a) Honesty-Humility, (b) Emotionality, and (c) Openness to Experience.

*Hypothesis 7:* Right Wing Authoritarianism will be negatively correlated with the Openness to Experience HEXACO personality trait.

*Hypothesis 8:* Social Dominance Orientation and Right Wing Authoritarianism will be (a) positively related to stigma prior to the intervention and (b) negatively related to reductions in mental disorder stigma following the intervention.

*Hypothesis 9:* Social Dominance Orientation and Right Wing Authoritarianism will mediate the relationship between the HEXACO personality variables and (a) mental disorder stigma prior to the intervention, as well as (b) mental disorder stigma reduction following the intervention.

## Method

### Participants

152 participants were recruited from across North America. In order to collect data from these participants, two forms of recruitment were used. First, 79 participants were recruited through the University of Calgary's online SONA Research Participation System, where undergraduate students signed up online to participate in research studies for course credits. Participants completed the online study in a computer lab supervised by the researcher or research assistant. Second, 73 participants were recruited using Amazon's Mechanical Turk (MTurk), which allowed research participants to complete tasks online for monetary payment. Research conducted on MTurk samples suggests that these participants are highly motivated and significantly more diverse than traditional samples, indicating that MTurk provides a valuable source of data collection (Buhrmester, Kwang, & Gosling, 2011). In order to obtain these participants, a recruitment notice was posted on MTurk for participants who were currently students at a post-secondary institution. Qualified and interested individuals were then re-directed to complete the survey through Qualtrics.

The mean age of participants was 24.2 years, with a standard deviation of 7.72 and a range of 18 to 61 years. In regards to gender, 60.5% of participants were female, 36.2% were male, 2.0% identified as non-binary, and 1 individual preferred not to disclose their gender. The majority of participants were 50.0% Caucasian, 19.1% Asian and 12.5% African-Canadian/African-American.

## **Data Cleaning Procedures**

In order to clean the dataset, three procedures were used to determine which participants to remove before analyzing the data. First, participants were removed if they completed less than half of the overall responses. Second, participants were removed if they provided the same responses across all scale items (e.g., responding with all 5's on a scale from 1-5 with reverse coded items included). Lastly, participants' Part 1 and Part 2 data were matched based on 3 questions that made up a unique identifying code for each participant. Part 2 data was removed if participants did not properly complete the questions that pertained to their unique code, and therefore the data between Part 1 and Part 2 could not be matched.

## **Procedure**

For both recruitment methods, the study consisted of two sessions, where participants were asked to sign up for both sessions. The first session took approximately 45 minutes to complete. Within this session, participants were asked to fill out self-report questionnaires measuring demographics, personality, modern prejudice towards people with mental illnesses, intergroup anxiety, empathy, perspective taking, Right Wing Authoritarianism and Social Dominance Orientation. At this time, respondents also completed the pre-test version of the Opening Minds Scale for Workplace Attitudes, as well as the Social Distance Scale. Participants were then randomly assigned to watch one of three ten-minute videos. Participants watched either a) a contact-based anti-stigma intervention video, b) a knowledge-based anti-stigma intervention video, or c) a control group video. Following the video, participants completed the post-test versions of the Opening Minds Scale for Workplace Attitudes and the Social Distance Scale, as well as a single measure of intergroup anxiety. In order to reduce the obviousness that participants were responding to the same questions both before and after the video, filler items



from additional scales that measure other potentially prejudiced attitudes (e.g., benevolent and hostile sexism, general prejudice, and attitudes towards persons with disabilities) were included at both the pre- and post-test. This allowed for a cover story where participants were told that the research was about their attitudes towards ‘diversity in general,’ as opposed to examining their mental disorder stigma specifically.

Approximately one week later, participants were asked to complete the second research session, which took 15-20 minutes. During this time, participants completed the post-test measure of the Opening Minds Scale for Workplace Attitudes, as well as the Social Distance Scale. Once again, additional filler items were used to maintain the cover story from session one.

Participants recruited from the University of Calgary SONA Research Participation System were compensated 1.5 course credits for their time. Individuals recruited through MTurk were compensated US \$9.00/hour for their participation.

### **Intervention Videos**

All three videos were created with the same actor and were filmed in the same location at the same time in order to keep them as equivalent as possible. In addition, the same core themes were matched for the contact and knowledge-based videos. Therefore, the same basic information was presented in each video, but conveyed through the lens of lived experience or facts, respectively. For a table of the information and topics presented across the two videos, please see the table presented in Appendix A.

**Contact-Based Anti-Stigma Video.** The contact-based intervention video presented an individual with lived experience of mental illness who discussed their journey to recovery. This included their experiences with help seeking, those who supported them along the way, how the recovery process went for them, and how they are doing now. In order to keep this video

comparable to the knowledge-based anti-stigma video, facts and myth-busting information were embedded throughout the individual's story. This video was recovery focused (as compared to symptom focused), since research has found that watching an individual describe their experiences of recovery from mental illness leads to more positive impressions and less preferred social distance towards that individual, as compared to watching an individual discuss the symptoms of their mental illness (Li, Sorrentino, Norman, Hampson, & Ye, 2017).

**Knowledge-Based Anti-Stigma Video.** The knowledge-based intervention video was composed of educational facts that counter common myths regarding mental illnesses, and work to disprove negative stereotypes (e.g., “Myth: Those with a serious mental illness are violent and unpredictable; Fact: People with serious mental illnesses are more likely to be victims of violence themselves, than the general population” [Stuart, 2003]). Furthermore, the video also provided educational information on how stigma reduction can aid in improving these negative outcomes. In order to keep the video comparable to the contact-based intervention video, similar themes were used and discussed. For instance, the knowledge-based video stated that “treating those with mental illnesses with an ‘us’ vs. ‘them’ perspective can be damaging to help seeking and treatment.” In comparison, during the contact-based video the actor discussed how feeling as though others treated them differently and like there was something wrong with them or different about them for having these challenges was a barrier to seeking help. Therefore, the knowledge-based video still incorporated the topics covered during the contact-based intervention, but provided this information more formally, as opposed to the information being presented as a personal story.

**Control Group Video.** The video that was presented to the control group taught participants about improving their communication skills, which was an unrelated topic to

perceptions of mental illnesses. It was approximately the same length as the contact-based and knowledge-based videos (~10 minutes) and contained the same actor as the previous two videos, in order to reduce potential inter-group biases.

## Measures

**Demographics.** Participants' demographic information was collected, such as their age, gender, ethnicity, and marital status (see Appendix B).

**Personality.** The 100-item HEXACO-PI-R was used to obtain self-rating of personality (Lee & Ashton, 2018). This scale is composed of six factors (Honesty Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness to Experience) that each have four corresponding facets. Participants were asked to indicate on a 5-point scale (1 = *Strongly Disagree*, 5 = *Strongly Agree*) the extent to which each statement relates to their own personality (see Appendix C). The internal consistency reliabilities for each personality dimension were as follows: Honesty-Humility ( $\alpha = .80$ ), Emotionality ( $\alpha = .77$ ), Extraversion ( $\alpha = .86$ ), Agreeableness ( $\alpha = .85$ ), Conscientiousness ( $\alpha = .82$ ), and Openness to Experience ( $\alpha = .84$ ).

**Intergroup Anxiety.** In order to measure intergroup anxiety towards individuals with mental illnesses, Szeto et al.'s (2015) adaptation of Stephan, Renfro, Esses, Stephan, and Martin's (2005) measure of intergroup anxiety was used. This measure consists of 14 emotions (e.g. ill at ease, threatened, anxious) and asked participants to rate the degree to which they feel (or would feel) each of these emotions when interacting with someone who has a mental illness. Each emotion was rated along a 10-point scale (e.g. 1 = *Not Threatened At All*, 10 = *Extremely Threatened*). An overall intergroup anxiety score was calculated by averaging the scores of these 14 items (see Appendix D). With the present sample, the internal consistency reliability for the intergroup anxiety scale was  $\alpha = .94$ .

**Modern Prejudice Towards People with Mental Illnesses.** Szeto et al.'s (2015) adaptation of McConahay's (1983) 7-item Modern Racism Scale was used to measure modern prejudice towards those with mental illnesses. This scale assesses three concepts related to opinions about those with mental illnesses: denial of continued discrimination, antagonism toward demands by those with mental illnesses, and resentment regarding special treatment for those with mental illnesses. Similar to the Modern Racism Scale, modern prejudice towards people with mental illnesses is meant to measure less overt forms of discrimination that may be considered more acceptable by the general public, and therefore endorsed by stigmatizing individuals. In order to adapt McConahay's scale as a measure of prejudice towards those with mental illnesses, Szeto et al. replaced the target group from the original scale with "people with mental disorders." The authors also adjusted the wording of items to more accurately reflect the Canadian context. The 7-item measure was rated along a 5-point scale, where 1 = *Strongly Disagree*, and 5 = *Strongly Agree* (see Appendix E). The internal consistency reliability for the adapted modern prejudice scale in the present study was  $\alpha = .83$ .

**Empathy and Perspective Taking.** Two subscales from The Interpersonal Reactivity Index (Davis, 1980, 1983) were used to measure empathic concern and perspective taking. Empathic concern relates to an other-oriented affective response of compassion towards someone in need, and perspective taking assesses an individuals' ability to take on the perspective of potential out-group members. Each subscale consists of 7-items which will be scored on a 5-point rating scale, where 1 = *Does Not Describe Me Well*, and 5 = *Describes Me Very Well* (see Appendix F). Within the current study, the Empathy and Perspective taking subscales had internal consistency reliabilities of  $\alpha = .84$  and  $\alpha = .83$  respectively.

**Right Wing Authoritarianism (RWA).** The 22-item Right Wing Authoritarianism Scale (Altemeyer, 1998) was used to assess participant's levels of conventionalism, authoritarian aggression, and authoritarian submission. These items were measured on a 9 point scale, ranging from -4 = *Very Strongly Disagree with the Statement* to 4 = *Very Strongly Agree with the Statement* (see Appendix G). The internal consistency reliability for the RWA scale was  $\alpha = .94$ .

**Social Dominance Orientation (SDO).** The 16-item Social Dominance Orientation Scale (Pratto et al., 1994) was used to measure the extent to which participants support the idea that 'in-group' members should be dominant and superior to 'out-group' members (see Appendix H). SDO was assessed according to a 7-point scale, where 1 = *Strongly Disagree* and 7 = *Strongly Agree*. The internal consistency reliability for SDO using this sample was  $\alpha = .95$ .

**Opening Minds Survey for Workplace Attitudes (OMS-WA).** The OMS-WA (Szeto, Luong, & Dobson, 2013) is an adaptation of the Youth Opinions Survey (Koller, Stuart, & The Opening Minds Youth Evaluation Network, 2011), and assesses general attitudes towards people with mental illnesses. For the purposes of this study, the OMS-WA scale has been adapted to assess these attitudes in a university context (e.g. I would not want to be supervised by someone who had been treated for a mental illness). This scale is composed of 23 items that include factors of avoidance, danger/unpredictability, work belief/competency, responsibility and helping intentions (see appendix I). Respondents answered these items according to a 5-point scale (1 = *Strongly Disagree*, 5 = *Strongly Agree*), where higher scores indicate more stigmatizing attitudes. With the current sample, the internal consistency reliability of this scale was  $\alpha = .94$  at Time 1,  $\alpha = .95$  at Time 2, and  $\alpha = .95$  at Time 3.

**Social Distance (SD).** In order to measure participants' desire for social distance between themselves and someone with a mental illness, Norman, Sorrentino, Windell, & Manchanda's

(2008) 12-item social distance scale was used (See Appendix J). This scale measured participant's intentional behavior to engage in contact with individuals who have mental illnesses. Participants indicated their likelihood of engaging in 12 different activities with someone with a mental disorder (i.e., "I would do school work with someone with a mental illness") on a 5-point scale ranging from 1 (*I Certainly Would Not*) to 5 (*I Certainly Would*). As lower scores on this scale indicate more stigmatizing attitudes, the scale was reverse coded, in order to be combined with the OMS-WA for an overall measure of mental disorder stigma. The internal consistency reliability for the social distance scale was  $\alpha = .94$  at Time 1,  $\alpha = .94$  at Time 2, and  $\alpha = .95$  at Time 3 in the current study.

**Filler Items.** The following additional scales were used during the pre-test, and both the Time 1 and Time 2 post-test measures, in order to maintain the cover story that the study was looking at attitudes towards diversity in general, as opposed to solely examining attitudes towards mental disorder stigma. The scales used were as follows: Attitudes Towards Diverse Workgroups Scale (Nakui, Paulus, & van der Zee, 2011), Ambivalent Sexism Inventory (Glick & Fiske, 1996), Attitudes Toward Diversity Scale (Montei, Adams & Eggers, 1996), Contact with Disabled Persons Scale (Yuker & Hurley, 1987), and the Interaction with Disabled Persons Scale (Gething & Wheeler, 1992).

## Results

### Preliminary Analyses

Prior to running the analyses for the proposed hypotheses, an independent samples t-test was conducted to compare the mean outcomes of the participants from MTurk ( $n = 79$ ) to the SONA participants ( $n = 73$ ). The two samples did significantly differ in the mental disorder stigma outcome variables at Time 1 (SONA:  $M = 1.93$ ,  $SD = .536$ ; MTurk:  $M = 2.19$ ,  $SD =$

.730);  $t(150) = -2.45, p = .016$ , Time 2 (SONA:  $M = 1.86, SD = .522$ ; MTurk:  $M = 2.12, SD = .770$ );  $t(150) = -2.46, p = .015$ , and Time 3 (SONA:  $M = 1.92, SD = .601$ ; MTurk:  $M = 2.24, SD = .831$ );  $t(104) = -2.17, p = .032$ . These differences in outcomes across the two sources could be taking place for various reasons. For instance, the MTurk sample was based in the United States of America, whereas the SONA sample consisted of only Canadian participants. Some of these differences may be a result of different perspectives on healthcare and politics surrounding mental health between these two countries. In addition, only students taking courses in Psychology could participate in the SONA sample, whereas the MTurk sample was limited to Post-Secondary students, who could be taking courses in any field. It is possible that the students who had chosen to take a course in Psychology (i.e., the SONA sample) had more information about, or possibly more interest in mental health, which could impact their mental disorder stigma ratings. However, in order to conduct the Bayesian estimation procedures needed to analyze the outcomes of the data over various time points, sample sizes of lower than 100 are not recommended (Kline, 2005). Therefore, the only way to proceed with the analyses was to collapse across the two data sources. These potential differences in the two samples should be taken into account when interpreting the results of the study, and the data source was controlled for in the analyses.

In addition, a one-way ANOVA was conducted to determine whether any of the three intervention groups (i.e., contact intervention, knowledge intervention and control group intervention) differed at baseline. There was not a significant effect of intervention group on levels of mental disorder stigma at Time 1,  $F(2, 149) = .18, p = .839$ . This suggests that the groups were successfully randomly assigned, as they did not differ in their levels of mental disorder stigma prior to receiving an intervention.

## Primary Analyses

**Hypothesis 1 & 2.** Correlation coefficients were calculated to determine the relationship between mental disorder stigma ratings at baseline (T1) with age, gender, the HEXACO personality factors, modern prejudice, empathy, perspective taking, and intergroup anxiety (see Table 1). Results displayed support for Hypothesis 1a, 1d, and 1e, as Openness to Experience ( $r = -.52^{**}, p < .001$ ), Honesty-Humility ( $r = -.31^{**}, p < .001$ ), and Emotionality ( $r = -.28^{**}, p < .001$ ) were significantly negatively correlated with mental disorder stigma at Time 1. This suggests that individuals low in Openness, H-H, and Emotionality were more likely to be stigmatizing towards those with mental illnesses prior to the intervention. Hypothesis 1b and 1c were not supported, as Agreeableness ( $r = -.09, p = .276$ ) and Conscientiousness ( $r = -.15, p = .071$ ) were not significantly correlated with mental disorder stigma at baseline. Consequently, individual's levels of Agreeableness and Conscientiousness did not appear to impact their level of mental disorder stigma prior to the intervention.

Hypothesis 2 was fully supported, as modern prejudice ( $r = .68^{**}, p < .001$ ) and intergroup anxiety ( $r = .76^{**}, p < .001$ ) were significantly positively related to mental disorder stigma at Time 1, while empathy ( $r = -.48^{**}, p < .001$ ) and perspective taking ( $r = -.45^{**}, p < .001$ ) were significantly negatively correlated with mental disorder stigma at Time 1. According to these findings, it appears that individuals who are high on intergroup anxiety and modern prejudice towards individuals with mental illnesses and low on empathy and perspective taking were more likely to stigmatize those with mental illnesses prior to the intervention, as predicted.



Table 1

*Descriptive Statistics and Correlations between HEXACO and Mental Disorder Stigma at Time 1<sup>a</sup>*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	24.19	7.72													
2. Gender	1.68	.59	-.01												
3. Honesty-Humility	3.34	.62	.05	.28**	(.80)										
4. Emotionality	3.40	.57	-.15	.28**	.19*	(.77)									
5. Extraversion	3.06	.68	.02	-.03	-.04	-.03	(.86)								
6. Agreeableness	3.06	.64	.04	-.04	.33**	-.08	.29**	(.85)							
7. Conscientiousness	3.50	.64	.19*	-.01	.12	-.08	.26**	.13	(.82)						
8. Openness	3.61	.64	.08	.19*	.15	.20*	.20*	.10	.26**	(.84)					
9. Modern Prejudice	2.25	.72	-.08	-.23*	-.28**	-.18*	-.01	.01	-.29**	-.42**	(.83)				
10. Intergroup Anxiety	3.61	1.71	.03	-.30*	-.28**	-.12	-.07	-.15	-.15**	-.46**	.65**	(.94)			
11. Empathy	3.93	.78	-.12	.25**	.32**	.40**	.34**	.27**	.22**	.44**	-.25**	-.33**	(.84)		
12. Perspective Taking	3.86	.73	-.04	.12	.21**	.20*	.24**	.52**	.21**	.47**	-.19*	-.42**	.66**	(.83)	
13. Stigma at Time 1	2.05	.65	.12	-.36**	-.31**	-.28**	-.10	-.09	-.15	-.52**	.68**	.76**	-.48**	-.45**	(.94)

<sup>a</sup> N = 152. Gender: 1 = male, 2 = female. Coefficient alpha reliabilities are provided in parentheses.

\* p &lt; .05

\*\* p &lt; .001

**Hypothesis 5.** Prior to examining the relationships between the independent variables of interest and the potential changes in mental disorder stigma from Time 1 to Time 2 and Time 3, Hypothesis 5 was addressed in order to determine the success of each intervention, and whether any differences existed between the outcomes of each intervention group. Hypothesis 5 was analyzed by conducting two ANCOVAs, where Time 1 mental disorder stigma was used as the covariate, and Time 2 and Time 3 mental disorder stigma were used as dependent variables. The first ANCOVA examined whether significant differences existed between the three intervention groups at Time 2, while controlling for stigma at Time 1. The results of the first ANCOVA analysis did not find significant differences between the three intervention groups at Time 2, when controlling for Time 1,  $F(2, 148) = 2.94, p = .056$ . An additional ANCOVA was conducted to determine whether there were significant differences in mental disorder stigma between the three intervention groups at Time 3, while controlling for stigma at Time 1, and found that there was a significant difference at Time 3,  $F(2, 102) = 3.67, p = .029$ . Pairwise comparisons revealed that the knowledge video intervention group had significantly lower levels of stigma at Time 3, as compared to the contact video intervention group ( $p = .008, 95\% \text{ CI } [.115, .742]$ ), but not the control video intervention group ( $p = .170, 95\% \text{ CI } [-.518, .093]$ ), when controlling for Time 1. There were also no significant differences in stigma between the control video intervention group and contact video intervention group at Time 3, when controlling for Time 1 ( $p = .178, 95\% \text{ CI } [-.531, .100]$ ).

These results suggest that the manipulation of our intervention types was not successful at Time 2, as both the contact intervention group and knowledge intervention group did not significantly differ in mental disorder stigma as compared to the control group. In addition, while

the knowledge video intervention group did have significantly lower levels of stigma compared to the contact video intervention group at Time 3, when controlling for Time 1, the knowledge video intervention group still did not differ from the control group at Time 3. Therefore, Hypothesis 5 was not supported, as the contact video intervention was not more successful than the knowledge video intervention, and neither of the interventions were more successful than the control group video at reducing mental disorder stigma. While these interventions did not have the outcomes that were intended, further analyses were still conducted in an attempt to address the proposed hypotheses.

**Hypothesis 3 & 4.** In order to examine whether any of the individual difference variables impacted changes in stigma both immediately following the intervention (T2), and one week later (T3), MPlus 7.4 software (Muthén & Muthén, 1998–2012) was used to conduct a Bayesian latent change score analysis, controlling for the unreliability of the stigma measure at T1 and T2 (to assess the latent change in stigma from T1 to T2), and controlling for the unreliability of the stigma measure at T1 and T3 (to assess the latent change in stigma from T1 to T3). This Bayesian latent change score was then regressed on the hypothesized predictor variables, in order to test Hypothesis 3 and Hypothesis 4. While the use of Bayesian analyses is fairly novel within organizational research, similar Bayesian analyses have been conducted by Bidee, Vantilborgh, Pepermans, Griep, & Hofmans (2016) in an organizational context (for a detailed discussion of Bayesian analyses see Kruschke, Aguinis, & Joo, 2012). A Bayesian latent change score was selected for this analysis because it is more effective than computing difference scores for two primary reasons. First, the Bayesian latent change score controls for the potential relationship between the first time that the data is collected, and the follow-up time points, which allows one

to control for possible ceiling and floor effects (i.e., similar to controlling for the association between an intercept and a slope variable in a growth model). In addition, the latent change scores used in this analysis do not involve creating new variables (i.e., difference scores) that were never measured, where the assumption is that the difference between two measurement moments irrespective of the start and end points will be the same. The Bayesian latent change score analysis instead takes into account the value of changes at different points in the scale (e.g., that a difference score of “1” does not necessarily mean the same thing, depending on where the score started and ended), allowing for a more accurate reflection of the changes that occurred following the interventions. For an example of the syntax used to run the Bayesian latent change score analysis, please see Appendix K.

**Model 1a.** Using the aforementioned Bayesian latent change scores, a latent change score regression analysis was conducted to determine whether any of the independent variables (i.e., HEXACO, intergroup anxiety, modern prejudice, empathy, and perspective taking) impacted changes in mental disorder stigma at Time 2 directly following the intervention, without accounting for the type of intervention provided, or controlling for the data source (i.e., MTurk and SONA samples). The Bayesian Information Criterion (BIC) was used to determine model fit as a function of the actual number of parameters in the model (Spiegelhalter, Best, Carlin, & van der Linde, 2002). The BIC for the model comparing stigma from T1 to T2, without controlling for data source or taking the intervention into account (i.e., Model 1a) was  $BIC_{1a} = 686.79$ . This value was later compared to Model 1b, to determine which of the two models had the best fit, based on the model with the lowest BIC value. Model 1a was used as a baseline model, in order to compare the simplest model (i.e., a model that did not take intervention type into account or

have any control variables) to the more complex model that was predicted in Hypothesis 3 (i.e., Model 1b). Since the BIC favors simpler models as compared to more complex models (Spiegelhatler et al., 2002), including Model 1a in the analysis provides a point of comparison for model fit, in determining whether the proposed model was a better fit for the data, as compared to the simplest model (i.e., Model 1a). If the BIC value of Model 1b is lower than the BIC value of Model 1a, this suggests that the more complex model is a better fit for the data, when taking into account the different regression parameters for each of the interventions. This use of comparing a simple model to the proposed complex model was employed for Hypothesis 3, Hypothesis 4 and Hypothesis 8b, in order to determine the goodness of fit for each model.

According to Model 1a, Conscientiousness significantly decreased mental disorder stigma at Time 2 ( $\beta = -.164, p = .05, 95\% \text{ CI } [-.408, .000]$ ), and modern prejudice led to a significant increase in mental disorder stigma at Time 2 ( $\beta = .298, p = .004, 95\% \text{ CI } [.104, .538]$ ), but the remaining individual difference variables did not significantly impact changes in stigma directly following the intervention (see Table 2).

**Model 1b.** Next, a mixture latent change score regression analysis was conducted (Model 1b), that controlled for the data source (i.e., MTurk and SONA) and accounted for the three different types of interventions. For an example of the syntax used to run the mixture change score regression analysis, see Appendix L. The analysis for Model 1b was conducted to determine whether any of the independent variables (i.e., HEXACO, intergroup anxiety, modern prejudice, empathy, and perspective taking) impacted changes in mental disorder stigma at Time 2 directly following the intervention, when accounting for the type of intervention provided and when accounting for the data source. When comparing the Bayesian Information Criterion (BIC)

of Model 1b ( $BIC_{1b} = 1288.66$ ) to Model 1a ( $BIC_{1a} = 686.79$ ), the model that did not control for data source and did not take the intervention groups into account was the better fitting model (i.e., Model 1a), as indicated by a lower BIC value. This is not surprising, as more complicated models tend to have higher BIC values, and the manipulation of intervention type was not successful, as none of the interventions led to significant reductions in stigma overall. Normally, it would be advised to only interpret the better fitting model according to the BIC value. However, for the purposes of addressing the hypotheses proposed for this thesis, the output from Model 1b was still interpreted, with the consideration that it is not the best fitting model.

When examining the results from Model 1b, which accounted for the type of intervention presented and controlled for the data source, only the *knowledge video intervention* group had significant regression results with the predictor variables. More specifically, Extraversion led to a significant increase in mental disorder stigma at Time 2 for the knowledge intervention group ( $\beta = .323$ ,  $p = .031$ , 95% CI [.007, .205]), whereas Conscientiousness ( $\beta = -.550$ ,  $p < .001$ , 95% CI [-.336, -.131]) and Openness to experience ( $\beta = -.429$ ,  $p = .018$ , 95% CI [-.310, -.053]) led to significant decreases in stigma following the knowledge intervention. Honesty-Humility, Emotionality, Agreeableness, intergroup anxiety, modern prejudice, empathy, and perspective taking did not impact changes in mental disorder stigma at Time 2 for the Knowledge video intervention group.

No significant relationships were found in the *contact video intervention* group or the *control video intervention* group between any of the individual differences variables and changes in mental disorder stigma at Time 2 (see Table 3).

Table 2

*Model 1a: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 2  
(Not Accounting for Intervention Group or Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Honesty-Humility	.035	.668	- .138	.213
Emotionality	.070	.368	- .093	.245
Extraversion	.156	.070	- .013	.377
Agreeableness	.064	.490	- .148	.285
Conscientiousness	- .164	.050	- .408	.000
Openness to Experience	- .059	.259	- .267	.117
Modern Prejudice	.298	.004	.104	.538
Intergroup Anxiety	- .12	.392	- .486	.109
Empathy	.065	.630	- .164	.356
Perspective Taking	- .202	.110	- .498	.045

**Model 2a.** Hypotheses 3 and Hypotheses 4 were tested again at Time 3 one week after the interventions had been provided. Once again, a Bayesian latent change score regression analysis (Model 2a) was conducted to determine whether any of the independent variables (i.e., HEXACO, intergroup anxiety, modern prejudice, empathy, and perspective taking) impacted changes in mental disorder stigma at Time 3, without accounting for the type of intervention provided, or controlling for the data source (i.e., MTurk and SONA samples). The BIC for Model 2a was  $BIC_{2a} = 944.42$ . This was later compared to the BIC for Model 2b, to determine which model better fit the data. According to Model 2a none of the independent variables significantly predicted changes in mental disorder stigma at Time 3 (see Table 4). Therefore, prior to controlling for the data source and accounting for the type of intervention given, none of the individual difference variables of interest impacted changes in mental disorder stigma one week after the video interventions were presented.

Table 3

*Model 1b: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 2  
(Accounting for Intervention Group and Controlling for Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Contact Video Intervention Group				
Honesty-Humility	-.230	.223	-.163	.019
Emotionality	-.113	.533	-.143	.056
Extraversion	.020	.915	-.104	.099
Agreeableness	.028	.908	-.124	.118
Conscientiousness	-.329	.072	-.176	-.019
Openness to Experience	-.142	.473	-.176	-.019
Modern Prejudice	.173	.366	-.052	.120
Intergroup Anxiety	.033	.873	-.040	.040
Empathy	.057	.832	-.095	.101
Perspective Taking	-.171	.544	-.168	.068
Knowledge Video Intervention Group				
Honesty-Humility	-.007	.969	-.141	.113
Emotionality	.167	.279	-.049	.158
Extraversion	.323	.031	.007	.205
Agreeableness	-.077	.639	-.150	.073
Conscientiousness	-.550	.000	-.336	-.131
Openness to Experience	-.429	.018	-.310	-.053
Modern Prejudice	.276	.207	-.045	.196
Intergroup Anxiety	-.429	.101	-.113	-.006
Empathy	.102	.640	-.114	.161
Perspective Taking	-.069	.721	-.147	.082
Control Video Intervention Group				
Honesty-Humility	.029	.864	-.073	.075
Emotionality	-.005	.977	-.106	.086
Extraversion	.124	.487	-.046	.085
Agreeableness	.219	.334	-.047	.135
Conscientiousness	-.313	.085	-.148	-.005
Openness to Experience	.054	.809	-.087	.095
Modern Prejudice	-.158	.492	-.147	.057
Intergroup Anxiety	-.160	.489	-.059	.022
Empathy	.339	.164	-.026	.146
Perspective Taking	-.505	.115	-.224	-.013



Table 4

*Model 2a: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 3  
(Not Accounting for Intervention Group or Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Honesty-Humility	-.078	.104	-.198	.014
Emotionality	.067	.108	-.015	.163
Extraversion	-.010	.812	-.100	.079
Agreeableness	.086	.116	-.022	.210
Conscientiousness	.031	.400	-.053	.107
Openness to Experience	.053	.294	-.047	.164
Modern Prejudice	.011	.762	-.132	.114
Intergroup Anxiety	-.004	1.044	-.167	.114
Empathy	-.095	.160	-.242	.041
Perspective Taking	.087	.202	-.042	.251

**Model 2b.** Similar to Model 1b, a follow-up mixture latent change score regression analysis was run (Model 2b), in which the data source was controlled for (i.e. MTurk and SONA) and the three different types of interventions were accounted for. Once again, the BIC score of Model 2a ( $BIC_{2a} = 944.42$ ) was compared to the BIC score of Model 2b ( $BIC_{2b} = 1529.70$ ). While the smaller BIC score provided by Model 2a suggests that this is the better fitting model, the data from Model 2b was still interpreted for the purpose of addressing the proposed hypotheses. These results were interpreted while keeping in mind the poor fit of Model 2b as compared to Model 2a.

While Model 1b found significant effects of the knowledge intervention group at Time 2, these effects were no longer present at Time 3, as none of the individual difference variables significantly impact changes in mental disorder stigma at Time 3 for those who viewed the *knowledge intervention* video. Conversely, while these same relationships were not significant for the contact intervention group at Time 2, there were some significant associations for the

*contact intervention* group at Time 3. More specifically, Emotionality ( $\beta = .184, p = .002, 95\%$  CI [.214, .742]), Extraversion ( $\beta = .144, p = .029, 95\%$  CI [.068, .640]) and perspective taking ( $\beta = .600, p < .001, 95\%$  CI [.813, 1.592]) led to a significant increase in mental disorder stigma at Time 3 for the contact intervention group, whereas Honesty-Humility ( $\beta = -.178, p = .020, 95\%$  CI [-.802, -.134]), Conscientiousness ( $\beta = -.235, p < .001, 95\%$  CI [-.804, -.382]) and empathy ( $\beta = -.302, p = .004, 95\%$  CI [-.861, -.280]) led to significant decreases in stigma. Agreeableness, Openness, intergroup anxiety, and modern prejudice did not impact changes in mental disorder stigma at Time 3 for the contact video intervention group.

One significant relationship was found for the *control group* at Time 3, as Conscientiousness led to a significant increase in mental disorder stigma for those who viewed the control video ( $\beta = .131, p = .031, 95\%$  CI [.017, .488]). No other significant relationships were found in the control group between the individual difference variables and changes in mental disorder stigma at Time 3 (see Table 5).

Table 5

*Model 2b: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 3 (Accounting for Intervention Group and Controlling for Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Contact Video Intervention Group				
Honesty-Humility	-.178	.020	-.802	-.134
Emotionality	.184	.002	.214	.742
Extraversion	.144	.029	.068	.640
Agreeableness	.035	.641	-.278	.392
Conscientiousness	-.235	.000	-.804	-.382
Openness to Experience	-.120	.059	-.609	-.038
Modern Prejudice	-.141	.053	-.555	-.087
Intergroup Anxiety	.124	.087	-.072	.237
Empathy	-.302	.004	-.861	-.280
Perspective Taking	.600	.000	.813	1.59

Knowledge Video Intervention Group				
Honesty-Humility	-.155	.201	- 1.09	.125
Emotionality	.084	.374	- .238	.583
Extraversion	-.034	.677	- .446	.229
Agreeableness	.138	.187	- .156	.753
Conscientiousness	.058	.489	- .281	.519
Openness to Experience	.147	.178	- .167	.838
Modern Prejudice	.179	.161	- .136	.781
Intergroup Anxiety	-.116	.399	- .311	.082
Empathy	-.075	.542	- .720	.289
Perspective Taking	-.079	.441	- .604	.198
Control Video Intervention Group				
Honesty-Humility	-.017	.804	- .344	.217
Emotionality	-.004	.966	- .518	.414
Extraversion	-.127	.058	- .486	-.032
Agreeableness	.052	.537	- .248	.418
Conscientiousness	.131	.031	.017	.488
Openness to Experience	-.014	.885	- .422	.300
Modern Prejudice	.199	.063	- .048	.819
Intergroup Anxiety	.032	.787	- .173	.194
Empathy	-.033	.802	- .540	.341
Perspective Taking	.113	.289	- .177	.564

The results from Model 2b provide partial support for Hypothesis 3, as Conscientiousness (Hypothesis 3c) and Honesty-Humility (Hypothesis 3d) led to greater reductions in mental disorder stigma for one of the two mental disorder stigma interventions (i.e., the contact intervention video) as predicted. However, Hypothesis 3a and 3b were not supported at Time 3, as Openness and Agreeableness did not impact mental disorder stigma following either of the mental disorder stigma interventions. In addition, both Emotionality and Extraversion led to increases in mental disorder stigma at Time 3 for the contact intervention group, which was not hypothesized. It was predicted that Emotionality would decrease mental disorder stigma following the intervention (Hypothesis 3e), and the impact that Extraversion might have on

mental disorder stigma was not predicted. In addition, the increase in mental disorder stigma seen for those high in Conscientiousness in the control group was also not hypothesized, as it was predicted that the control group would see no changes in stigma following the interventions.

Hypothesis 4 also received partial support at Time 3, but only for the contact intervention group. Empathy led to a decrease in mental disorder stigma following the contact video intervention as predicted in Hypothesis 4c. However, perspective taking led to an increase in mental disorder stigma at Time 3, which was in the opposite direction of hypothesis 4d, and both intergroup anxiety (4a) and modern prejudice (4b) did not impact changes in stigma one week following any of the interventions.

**Research Question.** To examine the research question regarding whether an interaction would occur between the anti-stigma intervention type and the levels of individual difference variables (i.e., that the contact-based intervention or the knowledge-based intervention might result in higher or lower levels of mental disorder stigma reduction dependent on whether participant's were high or low on various individual difference variables), two additional Bayesian latent change score regression analyses were conducted in which the interaction was defined between the intervention type and (1) emotionality, (2) empathy, (3) perspective taking, and (4) conscientiousness. In the first model, no significant interactions were found between the knowledge intervention group and Emotionality ( $\beta = .730, p = .193, 95\% \text{ CI } [-.942, 2.40]$ ), empathy ( $\beta = -.182, p = .422, 95\% \text{ CI } [-2.09, .1.71]$ ), perspective taking ( $\beta = 1.37, p = .052, 95\% \text{ CI } [-.305, 3.03]$ ) and Conscientiousness ( $\beta = -1.12, p = .069, 95\% \text{ CI } [-2.63, .334]$ ) when predicting the latent change score in stigma from Time 1 to Time 2. Similarly, no significant interactions were found between the contact intervention group and Emotionality ( $\beta = .423, p =$

.301, 95% CI [-1.18, 2.01]), empathy ( $\beta = -.208, p = .397, 95\% \text{ CI} [-1.81, 1.37]$ ), perspective taking ( $\beta = 1.01, p = .119, 95\% \text{ CI} [-.664, 2.63]$ ) and Conscientiousness ( $\beta = -.059, p = .471, 95\% \text{ CI} [-1.37, 1.20]$ ) when predicting the latent change score in stigma from Time 1 to Time 2.

In the second model, it was also found that there were no significant interactions between the knowledge intervention group and participant's levels of Emotionality ( $\beta = .447, p = .087, 95\% \text{ CI} [-.198, 1.12]$ ), empathy ( $\beta = -.064, p = .437, 95\% \text{ CI} [-.832, .666]$ ), perspective taking ( $\beta = -.114, p = .347, 95\% \text{ CI} [-.698, .445]$ ) and Conscientiousness ( $\beta = .103, p = .335, 95\% \text{ CI} [-.413, .603]$ ) when predicting the latent change score in stigma from Time 1 to Time 3.

Furthermore, no significant interactions were found between the contact intervention group and levels of Emotionality ( $\beta = .281, p = .175, 95\% \text{ CI} [-.323, .893]$ ), empathy ( $\beta = -.185, p = .296, 95\% \text{ CI} [-.878, .474]$ ), perspective taking ( $\beta = .488, p = .066, 95\% \text{ CI} [-.150, 1.15]$ ) and Conscientiousness ( $\beta = -.244, p = .144, 95\% \text{ CI} [-.726, .202]$ ) when predicting the latent change score in stigma from Time 1 to Time 3. The lack of significant interaction results suggests that an individual's level of emotionality, conscientiousness, empathy and perspective taking did not impact whether they would have more success in lowering their levels of mental disorder stigma based on the type of intervention that they were presented with.

**Hypothesis 6 & 7.** Correlation coefficients were calculated to determine whether Hypothesis 6 and Hypothesis 7 were supported (see Table 6). Hypothesis 6 received partial support, as Social Dominance Orientation (SDO) was significantly negatively correlated with Honesty-Humility ( $r = -.361^{**}, p < .001$ ; Hypothesis 6a) and Openness to Experience ( $r = -.403^{**}, p < .001$ ; Hypothesis 6c), but was not significantly correlated with Emotionality as

predicted ( $r = -.126, p = .124$ ; Hypothesis 6b). In addition, Conscientiousness was significantly negatively correlated with SDO ( $r = -.288^{**}, p = .005$ ), which was not hypothesized.

Hypothesis 7 was supported, as Right Wing Authoritarianism (RWA) was significantly negatively correlated with Openness to Experience ( $r = -.460^{**}, p < .001$ ). There was also a significant positive relationship between RWA and Agreeableness ( $r = .170^*, p = .036$ ), which had not been hypothesized. As expected, the remaining personality variables of Honesty-Humility ( $r = -.125, p = .128$ ), Emotionality ( $r = -.070, p = .390$ ), Extraversion ( $r = .081, p = .322$ ), and Conscientiousness ( $r = -.142, p = .082$ ) were not significantly related to RWA.

**Hypothesis 8.** In order to examine the relationships proposed in Hypothesis 8a, correlation coefficients were calculated to determine whether SDO and RWA were positively correlated with mental disorder stigma prior to the intervention (i.e., at Time 1). Correlation results supported Hypothesis 8a, as both SDO ( $r = .545^{**}, p < .001$ ) and RWA ( $r = .582^{**}, p < .001$ ) were positively related to mental disorder stigma at Time 1 (see Table 6).

**Model 3a.** To address Hypothesis 8b, a Bayesian latent change score regression model was once again estimated to determine whether SDO and RWA predicted changes in mental disorder stigma from Time 1 to Time 2 and from Time 1 to Time 3 (see Table 7). First Model 3a was estimated, which examined the association between SDO and RWA, and changes in mental disorder stigma from Time 1 to Time 2, and did not account for the type of intervention presented or control for data source (i.e., MTurk and SONA). The BIC for Model 3a was  $BIC_{3a} = 647.71$ . This was later compared to the BIC for Model 3b, to determine which model better fit the data. The results of Model 3a found that RWA resulted in a significant increase in mental

disorder stigma at Time 2 ( $\beta = .183, p = .010, 95\% \text{ CI } [.053, .308]$ ), but SDO did not ( $\beta = .122, p = .074, 95\% \text{ CI } [-.014, .241]$ ).

**Model 3b.** Model 3a was followed up by running a mixture latent change score regression analysis (Model 3b), which controlled for the data source (i.e. MTurk and SONA) and accounted for the three different types of interventions. The BIC for Model 3b was  $\text{BIC}_{3b} = 1272.87$ , which was larger than the BIC for Model 3a  $\text{BIC}_{3a} = 647.71$ . This suggests that the simpler model (i.e., Model 3a) is the better fit. However, for the purposes of addressing the hypotheses proposed, the results of Model 3b were interpreted.

According to Model 3b, RWA and SDO did not impact changes in mental disorder stigma at Time 2 for the *contact intervention group* (RWA:  $\beta = .143, p = .402, 95\% \text{ CI } [-.025, .060]$ ; SDO:  $\beta = .311, p = .056, 95\% \text{ CI } [-.004, .109]$ ), or the *knowledge intervention group* (RWA:  $\beta = .328, p = .062, 95\% \text{ CI } [-.004, .093]$ ; SDO:  $\beta = .276, p = .124, 95\% \text{ CI } [-.021, .146]$ ). However, in the *control group*, RWA did significantly predict changes in mental disorder stigma at Time 2 ( $\beta = .500, p < .001, 95\% \text{ CI } [.025, .110]$ ), while SDO did not ( $\beta = .042, p = .781, 95\% \text{ CI } [-.048, .064]$ ). Therefore, the results from Model 3b do not provide support for Hypothesis 8b, as SDO and RWA did not impact changes in mental disorder stigma at Time 2 for those who received either of the stigma interventions (see Table 8).

Table 6

*Descriptive Statistics and Correlations between HEXACO, RWA, SDO and Mental Disorder Stigma at Time 1<sup>a</sup>*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Age	24.19	7.72											
2. Gender	1.68	.59	-.01										
3. Honesty-Humility	3.34	.62	.05	.28**	(.80)								
4. Emotionality	3.40	.57	-.15	.28**	.19*	(.77)							
5. Extraversion	3.06	.68	.02	-.03	-.04	-.03	(.86)						
6. Agreeableness	3.06	.64	.04	-.04	.33**	-.08	.29**	(.85)					
7. Conscientiousness	3.50	.64	.19*	-.01	.12	-.08	.26**	.13	(.82)				
8. Openness	3.61	.64	.08	.19*	.15	.20*	.20*	.10	.26**	(.84)			
9. RWA	3.07	1.56	.08	-.19*	-.13	-.07	.08	.17*	-.14	-.46**	(.95)		
10. SDO	2.23	1.06	-.04	-.31*	-.36**	-.13	-.04	-.09	-.23**	-.40**	.55**	(.94)	
11. Stigma at Time 1	2.05	.65	.12	-.36**	-.31**	-.28**	-.10	-.09	-.15	-.52**	.58**	.55**	(.96)

<sup>a</sup>N = 152. Gender: 1 = male, 2 = female. Coefficient alpha reliabilities are provided in parentheses.

\* p < .05

\*\* p < .001



Table 7

*Model 3a: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 2 (Not Accounting for Intervention Group or Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Right Wing Authoritarianism	.183	.010	.053	.308
Social Dominance Orientation	.122	.074	-.014	.241

Table 8

*Model 3b: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 2 (Accounting for Intervention Group and Controlling for Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Contact Video Intervention Group				
Right Wing Authoritarianism	.143	.402	-.025	.060
Social Dominance Orientation	.311	.056	-.004	.109
Knowledge Video Intervention Group				
Right Wing Authoritarianism	.328	.062	-.004	.093
Social Dominance Orientation	.276	.124	-.021	.146
Control Video Intervention Group				
Right Wing Authoritarianism	.500	.000	.025	.110
Social Dominance Orientation	.042	.781	-.048	.064

**Model 4a.** In order to test whether SDO and RWA impacted mental disorder stigma at Time 3, Model 4a and 4b were created. Similar to above, Model 4a was used to estimate a Bayesian latent change score regression model to determine whether SDO and RWA predicted changes in mental disorder stigma from Time 1 to Time 3, without controlling for data source or considering the type of video intervention provided (see Table 9). The BIC value of Model 4a was  $BIC_{4a} = 936.44$ , which is later compared to the BIC of Model 4b to determine which model better fits the data. Model 4a did not find any significant relationships between RWA and

changes in mental disorder stigma at Time 3 ( $\beta = .147, p = .076, 95\% \text{ CI } [-.018, .295]$ ), or SDO and changes in mental disorder stigma at Time 3 ( $\beta = .114, p = .180, 95\% \text{ CI } [-.065, .262]$ ).

Table 9

*Model 4a: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 3 (Not Accounting for Intervention Group or Data Source)*

Predictor	<i>B</i>	<i>p</i>	95% LLCI	95% UPCI
Right Wing Authoritarianism	.147	.076	-.018	.295
Social Dominance Orientation	.114	.180	-.065	.262

**Model 4b.** Model 3a was followed up by running a mixture latent change score regression analysis (Model 4b), which controlled for the data source (i.e. MTurk and SONA) and accounted for the three different types of interventions (see Table 10). The BIC value of Model 4b was  $BIC_{4b} = 1545.98$ , which is larger than the BIC of Model 4a ( $BIC_{4a} = 936.44$ ), suggesting that Model 4a better fits the data. Once again, for the purpose of addressing all of the questions proposed in this thesis, the results of Model 4b were still interpreted. According to this model, RWA and SDO did not impact changes in mental disorder stigma at Time 3 for the *contact intervention group* (RWA:  $\beta = .088, p = .370, 95\% \text{ CI } [-.094, .239]$ ; SDO:  $\beta = -.087, p = .415, 95\% \text{ CI } [-.332, .132]$ ), or the *knowledge intervention group* (RWA:  $\beta = .143, p = .214, 95\% \text{ CI } [-.064, .309]$ ; SDO:  $\beta = .023, p = .850, 95\% \text{ CI } [-.317, .383]$ ). However, in the *control group*, SDO did significantly predict changes in mental disorder stigma at Time 2 ( $\beta = .342, p = .010, 95\% \text{ CI } [.058, .842]$ ), while RWA did not ( $\beta = .130, p = .338, 95\% \text{ CI } [-.137, .383]$ ). Therefore, the results from Model 4b also do not provide support for Hypothesis 8b, as SDO and RWA did not impact changes in mental disorder stigma at Time 3 for those who received either of the stigma interventions. As a result, Hypothesis 8b was not supported at either Time 2 or Time 3.

Table 10

*Model 4b: Bayesian Latent Change Score Regression Analysis from Time 1 to Time 3  
(Accounting for Intervention Group and Controlling for Data Source)*

<b>Predictor</b>	<b>B</b>	<b>p</b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Contact Video Intervention Group				
Right Wing Authoritarianism	.088	.370	-.094	.239
Social Dominance Orientation	.087	.415	-.332	.132
Knowledge Video Intervention Group				
Right Wing Authoritarianism	.143	.214	-.064	.309
Social Dominance Orientation	.023	.850	-.317	.383
Control Video Intervention Group				
Right Wing Authoritarianism	.130	.338	-.137	.383
Social Dominance Orientation	.342	.010	.058	.842

**Hypothesis 9.** Hypothesis 9a proposed that SDO and RWA would mediate the relationship between the HEXACO personality variables and mental disorder stigma prior to the interventions (i.e., at Time 1). Mediation analyses were conducted for the three personality traits that showed significant correlations with mental disorder stigma at Time 1 (i.e., Honesty-Humility, Emotionality, and Openness to Experience), in order to determine whether SDO or RWA might be able to explain these relationships. The PROCESS macro as outline by Hayes (2013) was used to test the relationships in each of these mediation models. All hypotheses were tested using bootstrapped samples of 5,000 and a 95% confidence interval. In order to assess whether SDO and RWA mediated the relationship between personality and stigma, the indirect effects indicated by the PROCESS mediation output were examined. Indirect effects help assess the degree to which the effect of the independent variable on the dependent variable is explained by the mediating mechanisms, and are deemed to be significant if the confidence intervals do not include zero (Hayes, 2009). Results of the PROCESS analyses are reported in Table 11.

According to the PROCESS analyses, there was a significant indirect effect of Honesty-Humility ( $b = -.190$ ,  $SE = .049$ ,  $95\% CI = [-.304, -.107]$ ), and Openness to Experience ( $b = -.165$ ,  $SE = .057$ ,  $95\% CI = [-.294, -.074]$ ) on stigma at Time 1 through SDO. Honesty-Humility was no longer a significant predictor of stigma at Time 1 after controlling for SDO ( $b = -.129$ ,  $t(147) = -1.66$ ,  $p = .098$ ), which is consistent with a full mediation. Openness to Experience was still a significant predictor of baseline stigma after controlling for SDO ( $b = -.354$ ,  $t(147) = -4.99$ ,  $p < .001$ ), which suggests a partial mediation is taking place. There was also a significant indirect effect of Openness on Time 1 stigma through RWA ( $b = -.204$ ,  $SE = .063$ ,  $95\% CI = [-.347, -.098]$ ), but once again Openness was still a significant predictor of baseline stigma after controlling for RWA ( $b = -.354$ ,  $t(147) = -4.99$ ,  $p < .001$ ), suggesting that RWA is only partially mediating this relationship. There was not a significant indirect effect of Emotionality on Stigma at Time 1 through RWA ( $b = -.045$ ,  $SE = .054$ ,  $95\% CI = [-.168, .049]$ ) or SDO ( $b = -.074$ ,  $SE = .048$ ,  $95\% CI = [-.177, .010]$ ).

These results are not surprising, given that SDO was significantly negatively correlated with Honesty-Humility and Openness to Experience, and RWA was significantly negatively correlated with Openness to Experience, but neither RWA nor SDO were correlated with Emotionality. Therefore, Hypothesis 9a was partially supported, as SDO and RWA were found to be significant mediators between HEXACO and stigma at Time 1 for two of the three personality variables that had originally correlated with baseline stigma (i.e., Honesty-Humility and Openness to Experience, but not Emotionality).

Hypothesis 9b was meant to assess whether SDO and RWA mediate the relationship between any of the HEXACO personality variables and changes in mental disorder stigma

following the interventions. This analysis was not conducted, as the regression results from Hypothesis 8b found that SDO and RWA did not significantly predict mental disorder stigma reduction from Time 1 to Time 2 or from Time 1 to Time 3, and therefore it would not be appropriate to conduct mediation analyses on these non-significant results.

Table 11

*PROCESS Results for RWA and SDO Mediation Models*

<b>Predictor</b>	<b><i>b</i></b>	<b><i>SE</i></b>	<b><i>R</i><sup>2</sup></b>	<b>95% LLCI</b>	<b>95% UPCI</b>
Right Wing Authoritarianism					
Honesty-Humility	-.072	.053	.397	-.187	.024
Emotionality	-.045	.054	.398	-.168	.049
Openness to Experience	-.204	.063	.417	-.347	-.098
Social Dominance Orientation					
Honesty-Humility	-.190	.049	.310	-.304	-.107
Emotionality	-.074	.048	.340	-.177	.010
Openness to Experience	-1.65	.057	.399	-.294	-.074

**Discussion**

One of the primary purposes of this study was to test the ‘Individual Differences’ portion of Pettigrew’s (1998) Intergroup Contact Theory, which suggests that an individual’s experiences and characteristics will impact the success of contact interventions aimed at reducing stigma over time. Little empirical evidence exists to support this portion of Pettigrew’s model, and therefore the current study aimed to provide evidence that individual differences can impact mental disorder stigma reduction, following a contact-based intervention. Furthermore, the present study also intended to expand upon this model by comparing how individual differences might impact the effectiveness of a contact-based intervention, as compared to a knowledge-based intervention, to determine whether knowledge interventions lead to greater reductions in

stigma for certain individuals. In order to accomplish this, the current study examined how the outcomes of two forms of mental disorder stigma interventions (i.e., a knowledge-based intervention and a contact-based intervention) were related to various individual difference variables, including the HEXACO model of personality, modern prejudice, intergroup anxiety, empathy, perspective taking, Right Wing Authoritarianism and Social Dominance Orientation. Overall, the results of the study demonstrated some preliminary support for the notion that individual differences can impact the success of both contact-based and knowledge-based mental disorder anti-stigma interventions. However, as both the knowledge and contact interventions did not significantly reduce mental disorder stigma overall, as compared to the control group intervention, these results should be interpreted with caution.

### **Stigma and Individual Differences**

When examining the relationships between the HEXACO personality variables and mental disorder stigma at baseline, Hypothesis 1a, 1d, and 1e were supported, as Openness to Experience, Honesty-Humility, and Emotionality were significantly negatively correlated with stigma at Time 1. These findings imply that individuals low in Honesty-Humility, Openness, and Emotionality may be more likely to engage in mental disorder stigma prior to receiving a mental disorder stigma intervention. These findings are relatively novel, as only the Honesty-Humility factor has been examined in prior research with mental disorder stigma, which found similar results (Szeto et al., 2015). Openness to Experience and Emotionality within the HEXACO model have not been studied previously in relation to stigma, and while the Openness variable within HEXACO is fairly similar to Openness within the Five Factor Model that has previously been examined in this field (Ashton & Lee, 2007), the Emotionality variable is unique to the

HEXACO model. Therefore, determining that Emotionality plays a role in mental disorder stigma provides a novel contribution to the stigma literature, as this relationship has not been tested in prior studies.

Furthermore, previous research has found support that Agreeableness within the Five Factor Model of personality is significantly negatively correlated with mental disorder stigma (Brown, 2012; Szeto et al., 2015), but these results were not replicated in the current study. Agreeableness within the HEXACO model is somewhat dissimilar to the same-named factor of the Five Factor Model, as HEXACO describes Agreeableness as including the facets of Forgiveness, Gentleness, Flexibility, and Patience, as compared to the FFM, which describes Agreeableness as including Sentimentality, Gentleness and Sympathy (Ashton & Lee, 2007). One of the key differences between the Agreeableness variables within these two models is that the Sentimentality facet of Agreeableness within the FFM is incorporated into the Emotionality factor in HEXACO. This sentimentality facet assesses an individual's tendencies to feel empathic sensitivity and emotionally bonded towards other people, as well as their reactions towards the concerns of other individuals (Ashton & Lee, 2007). Therefore, the relationship between stigma and Agreeableness within the HEXACO model may be different from the relationship between stigma and Agreeableness within the FFM, due to the shift in the Sentimentality facet from Agreeableness to Emotionality, especially when considering that the Emotionality factor within the HEXACO model was significant in the current study. These differences between the Agreeableness factors and the Emotionality factor between the two models could aid in explaining the null Agreeableness finding in the present study.

Overall, the results between the HEXACO model of personality and mental disorder stigma presented in this study indicate that it is important to use the HEXACO model of personality when analyzing underlying traits related to mental disorder stigma, as the addition of the Honesty-Humility and Emotionality factors appear to be playing a significant role. Therefore, the relationship between mental disorder stigma and Agreeableness may be more accurately reflected by the HEXACO model of personality, though replication of these results would be necessary prior to making these claims.

Hypothesis 2 received full support, as modern prejudice and intergroup anxiety had significant positive relationships with mental disorder stigma at Time 1, while empathy and perspective taking had significant negative relationships with mental disorder stigma at Time 1. These results replicate previous findings in the general prejudice literature (Blascovich et al., 2001; Page-Gould et al., 2008; Todd et al., 2011), and more specifically, these outcomes replicate the results found in Szeto et al.'s (2015) study in relation to mental disorder stigma. These findings suggest that individuals high in modern prejudice towards people with mental illnesses, high in intergroup anxiety, and low in empathy and perspective taking may be more likely to have greater levels of mental disorder stigma at baseline.

### **Anti-Stigma Interventions and Individual Differences**

The purpose of Hypothesis 3 and 4 was to determine whether any of the aforementioned individual difference variables would have an impact on changes in mental disorder stigma ratings both directly following an anti-stigma intervention, and one week after the intervention took place. In order to examine these relationships, Bayesian latent change scores were created to control for the unreliability of the stigma measures between each of the three time points. These



scores were used in a regression analysis to determine whether the HEXACO personality variables, modern prejudice, intergroup anxiety, empathy, and perspective taking would predict changes in mental disorder stigma at Time 2 and Time 3 (as represented by the Bayesian latent change scores). When controlling for the data source (i.e., MTurk participants as compared to SONA participants), and taking into account the three types of interventions (i.e., contact video intervention, knowledge video intervention and control group intervention), partial support was found for Hypothesis 3 and 4.

Hypothesis 3 was partially supported at Time 2, as Conscientiousness and Openness to Experience lead to significant decreases in stigma for those in the knowledge intervention group, as predicted by Hypothesis 3a and 3c. In addition, Extraversion lead to a significant increase in stigma at Time 2, which was not predicted, and no significant relationships were found at Time 2 for the contact intervention group, or the control group. One week later the effects of the knowledge intervention group were no longer seen, as none of the relationships were significant at Time 3. Conversely, for the contact intervention group, Emotionality and Extraversion lead to significant increases in stigma one-week following the intervention, and for the control group, Conscientiousness lead to a significant increase in mental disorder stigma at Time 3. Therefore, Hypothesis 3 was not supported at Time 3, as none of the HEXACO personality traits were related to decreases in mental disorder stigma one week after the interventions took place, and some of the personality traits actually lead to increases in stigma for the contact and control groups.

Hypothesis 4 was not supported at Time 2 for any of the three intervention groups, as modern prejudice, intergroup anxiety, empathy, and perspective taking were not related to any

changes in mental disorder stigma directly following the stigma interventions. Hypothesis 4 did receive partial support at Time 3, but only for the contact intervention group, as empathy lead to a decrease in mental disorder stigma following the contact intervention. In addition, perspective taking led to a significant increase in stigma in the contact intervention group at Time 3, which was in the opposite direction to what was hypothesized. These results may be explained by research conducted by Vorauer, Martens, and Sasaki (2009) who found that following intergroup contact situations, perspective taking lead to treating out-group members less positively for individuals who were low in prejudice to begin with, whereas perspective taking had a positive effect for those high in prejudice. These results suggest that if individuals have low levels of prejudice prior to a contact intervention, and engage in high levels of perspective taking, the contact intervention may actually have the opposite effects as were intended and increase prejudice. Considering that in the present study the mean of mental disorder stigma at Time 1 was 2.05 on a 5-point scale, this relatively low stigma score at baseline may have resulted in increases in stigma for those high in perspective taking, when they received the contact intervention.

Furthermore, it should be noted that while the present study chose to look at intergroup anxiety, empathy, and perspective taking as predictors of mental disorder stigma reduction, other research has examined these variables as mediating the relationship between intergroup contact and prejudice, and found support for the mediating role of these three variables (Pettigrew & Tropp, 2008). Therefore, while it is clear that intergroup anxiety, empathy, and perspective taking are playing a role in stigma reduction, multiple perspectives have been taken on what the nature of that role might be.

Overall, the lack of support for Hypothesis 3 and 4 are likely a result of challenges taking place with the interventions used in the current study. Hypothesis 5 had suggested that the contact-based mental disorder stigma intervention would have the most success in reducing stigma (as compared to both the knowledge and control group), and that the knowledge-based stigma intervention would have more success than the control group intervention in reducing mental disorder stigma. At Time 2, there appeared to be no effect of intervention type, as both the contact intervention group and knowledge intervention group did not significantly differ from the control group in mental disorder stigma ratings. At Time 3, the knowledge intervention group did have significantly lower levels of stigma than the contact intervention group, but did not differ from the control group. These results suggest that overall the anti-stigma video interventions created for this study were not successful at reducing mental disorder stigma, as compared to the control group intervention. Therefore, while the findings for Hypothesis 3 and 4 were not as predicted, this is likely due to a lack of intervention success, and may not accurately represent these relationships following successful mental disorder stigma interventions.

Hypothesis 6 examined whether Social Dominance Orientation was significantly negatively correlated with Honesty-Humility, Emotionality, and Openness to Experience at Time 1. Correlation analyses provided support for Hypothesis 6a, and 6c, as SDO was negatively related to Honesty-Humility and Openness to Experience, but not Emotionality (Hypothesis 6b). These findings indicate that those low in Honesty-Humility and Openness are more likely to be high in SDO, which is consistent with previous research conducted with HEXACO (Lee et al., 2010; Sibley et al., 2010). However, both of these previous studies did find support for a

negative relationship between Emotionality and SDO, which was not replicated in the present sample.

Hypothesis 7 was supported, as Right Wing Authoritarianism was negatively correlated with Openness to Experience at Time 1, which replicates previous findings (Lee et al., 2010; Sibley et al., 2010), suggesting that those low in Openness are more likely to be high in RWA. Agreeableness was also significantly positively correlated with RWA, though this relationship was not hypothesized. This finding is consistent with results found by Sibley et al. (2010), though Lee et al. (2010) did not find this same positive relationship between RWA and Agreeableness, indicating that future research is needed to better understand the relationship between the HEXACO personality variables and RWA.

The purpose of hypothesis 8 was to determine whether RWA and SDO were positively related to mental disorder stigma at Time 1, and negatively related to reductions in stigma at Time 2 and 3. Correlation results found support for Hypothesis 8a, as both RWA and SDO were significantly positively related with mental disorder stigma at baseline. In order to assess Hypothesis 8b, once again regression models with Bayesian latent change score were created. When controlling for data source and taking into account the three types of interventions, RWA and SDO did not impact changes in mental disorder stigma for the contact intervention group or the knowledge intervention group at Time 2. However, RWA did significantly predict an increase in stigma for the control group at Time 2. This suggests that while being high in RWA and SDO did not impact changes in stigma at Time 2 for those in either of the stigma interventions, it did lead to an increase in mental disorder stigma for those in the control group directly following the intervention. At Time 3, similar results were found, as RWA and SDO

once again did not impact stigma for the contact or knowledge intervention group, but SDO did significantly predict an increase in mental disorder stigma for those in the control group.

Therefore, Hypothesis 8b was not supported, as SDO and RWA did not impact changes in stigma for either of the intervention groups at Time 2 or Time 3. As mentioned with Hypothesis 3 and 4, these outcomes are likely in part a result of the contact and knowledge interventions being unsuccessful in reducing mental disorder stigma, as compared to the control group.

### **The Mediating Role of RWA and SDO**

Lastly, Hypothesis 9 proposed that SDO and RWA would mediate the relationship between the HEXACO personality variables and mental disorder stigma both before the intervention (9a) and after the intervention (9b). Hypothesis 9a was partially supported, as SDO fully mediated the relationship between Honesty-Humility and stigma at Time 1, and partially mediated the relationship between Openness to Experience and stigma at Time 1. In addition, RWA partially mediated the relationship between Openness to Experience and stigma at Time 1. However, SDO and RWA did not significantly mediate the relationship between Emotionality and mental disorder stigma at Time 1, which is not surprising, considering that Emotionality was not significantly correlated with SDO or RWA. These results suggest that SDO and RWA had significant mediating effects for two of the three HEXACO personality variables that were correlated with mental disorder stigma at Baseline, which indicates partial support for Hypothesis 9a.

The analyses for Hypothesis 9b were not conducted, as the regression results for Hypothesis 8b did not find any significant relationships between SDO, RWA and mental disorder stigma reductions at Time 2 or Time 3. These results suggest that SDO and RWA did

not predict changes in mental disorder stigma following the interventions, and therefore it would not be appropriate to try and explain these non-significant results by conducting a mediation analysis. Once again, it is possible that these hypothesized relationships do exist, but were unable to be captured in the current study as a result of the interventions being unsuccessful in reducing mental disorder stigma at Time 2 and Time 3.

### **Implications**

The results of this study add to the mental disorder stigma literature in several ways. First, the current study was able to replicate and extend previous research examining mental disorder stigma and individual differences. The results found in Szeto et al.'s (2015) study regarding mental disorder stigma and modern prejudice, intergroup anxiety, empathy and perspective taking were further supported by the outcomes of the present study. By replicating these results, it increases the likelihood that the relationships found in Szeto et al.'s study are accurate, and therefore mental disorder stigma is likely negatively related to empathy and perspective taking, and positively related to modern prejudice and intergroup anxiety. The current study also extends the findings of Szeto et al.'s research by examining the relationship between stigma and the HEXACO model of personality, and seeing how these results varied compared to the previous research, which has only been conducted with the Five Factor Model. The results of this study suggest that both Honesty-Humility and Emotionality are significantly related to mental disorder stigma, which indicates that examining the HEXACO model in relation to stigma is an important contribution, as both Honesty-Humility and Emotionality are variables that are not included in the FFM (Lee & Ashton, 2004).

An additional contribution of this research is that it examines the portion of Pettigrew's (1998) Intergroup Contact Theory that proposes how people's individual differences will influence changes in mental disorder stigma following intergroup contact. While previous research has examined the relationship between individual differences and baseline levels of prejudice and stigma (Pettigrew & Tropp, 2008; Pettigrew et al., 2011; Szeto et al., 2015; Todd et al., 2011), no study has been conducted to examine whether individual differences will impact changes in mental disorder stigma following an intervention. Therefore, the current study intended to address this gap in the stigma literature by testing the portion of Pettigrew's theory, which suggests that the degree to which stigma decreases over time following a contact-based intervention will depend on individual traits.

Furthermore, the present study attempted to not only assess the relationship between individual differences and outcomes of mental disorder stigma using contact based interventions, but also to determine whether the relationships between individual differences and stigma reduction would differ for those engaging in a knowledge-based intervention. Previous research conducted by Corrigan (2005) found that contact-based interventions yield significantly stronger results for adults, as compared to education-based interventions. However, the current study aimed to assess whether that would differ based on particular individual differences, which would help to better understand why mental disorder stigma interventions might be more successful for some individuals and not others. Unfortunately, the stigma intervention videos in this study were not successful in reducing stigma, as compared to a control group. However, the results of the present study still suggest that there may be differences taking place between what leads to success for those in the knowledge intervention group, as compared to the contact

intervention group. For instance, individuals high in Conscientiousness and Openness were more likely to have decreased stigma directly following the intervention when they received the knowledge intervention, but not the contact intervention. Furthermore, one-week later, individuals high in Honesty-Humility and Conscientiousness were more likely to have decreased stigma when in the contact intervention group, but not the knowledge intervention group. These results suggest that personality traits may in fact play a role in the success of mental disorder stigma immediately following the intervention, as well as over time. However, further research is needed to determine the outcomes of these relationships with more successful interventions, and whether individual differences are impacting the stigma interventions that are currently being conducted in the workplace.

It is important to examine whether individual differences are moderating stigma reduction, as many of the anti-stigma interventions currently being conducted in Canada are based on the contact approach (Modgill et al., 2014; Stuart et al., 2014a), and there may be a subgroup of individuals who would be more positively impacted by knowledge-based interventions, that are presently being overlooked. For instance, the current study suggests that based on individual differences, certain employees may have more success with knowledge-based interventions, as compared to contact-based interventions. Therefore, by better understanding how individual differences can impact stigma interventions, research in this area can aid in improving current interventions, or inform the development of new workplace anti-stigma interventions. Perhaps the most effective suggestion would be to implement a single anti-stigma intervention in the workplace that includes both knowledge-based and contact-based content, in order to ensure that the intervention is as effective as possible for all individuals in attendance.



This study also added to the stigma intervention literature by examining the outcomes of mental disorder stigma not only directly following an intervention, but one week later as well. While the interventions used in the current study did not prove to be successful, the importance of examining outcomes of mental disorder stigma interventions over time is still significant. While future research is needed to fully understand these relationships, the results of the present study still found differences in the relationships between the HEXACO personality variables, RWA, SDO and changes in mental disorder stigma at Time 2 as compared to Time 3. This suggests that the results of stigma interventions, as well as the mechanisms underlying these potential changes in stigma, are likely to vary over time. Therefore, this study contributes to the mental disorder stigma intervention literature, by highlighting that differences in mental disorder stigma may occur over time, and should be considered not only within future research, but especially when measuring the outcomes of mental disorder stigma interventions taking place in applied workplace settings.

### **Limitations and Future Directions**

While the proposed study is innovative and will aid in reducing some of the gaps that currently exist in the stigma literature, it also contains some limitations. For instance, as mentioned by Pettigrew (1998), it is likely that particular individuals may be more inclined to self-select into a study that involves stigma or discrimination of a particular group. Therefore, the participants in this study may be more interested in mental health or less prone to stigmatizing than the rest of the population, as they have chosen to spend their time participating in a study involving mental disorder stigma.

Furthermore, two participant samples were combined when analyzing the results of the study, one being a student sample from Amazon Mechanical Turk, and the other being a sample of Psychology undergraduate students from the University of Calgary. These two samples significantly differed in their mental disorder stigma outcomes at all three time points (i.e., prior to the intervention, directly following the intervention, and one week later), which likely impacted the outcomes of the study results. There are multiple reasons why these differences may be taking place between the two samples. For instance, the MTurk sample was collected from the United States, whereas the SONA sample was collected from Canadian participants. Potentially different perspectives on healthcare and politics regarding mental health may have impacted the differences between these participant groups. In addition, all of the SONA participants were students taking a university level Psychology course, whereas the MTurk sample had no such restriction. Once again, this suggests that self-selection and knowledge about mental health could be impacting the results of this sample. As a result, it would have been preferable to examine the outcomes of these two samples separately, in order to determine whether these differences impacted the study's findings. However, in order to conduct the Bayesian estimation procedures used to analyze the data outcomes over various time points, sample sizes of lower than 100 are not recommended (Kline, 2005), and therefore the data was collapsed across the two samples, creating a limitation of the current research.

Moving forward it would be advantageous to collect additional data from both samples, in order to have a large enough sample sizes to analyze these two data sets separately, and compare the results between each group. In addition, all of the participants in the current study were post-secondary students, which limits the applicability of the study's results, especially in a

workplace setting where these interventions typically take place. Ideally, future research will also be conducted to examine whether these outcomes can be replicated with a workplace sample, such as in policing. This would allow for a comparison of the findings between the undergraduate psychology student sample, the MTurk sample, and a workplace sample, in order to determine the generalizability of the results, and determine whether the results of two experimental samples differ from an applied sample.

An additional limitation of the present study is the lack of intervention success found at Time 2 and Time 3, when comparing the outcomes of the contact intervention group, the knowledge intervention group, and the control group. This may be based partially on the fact that video-based interventions were used, as compared to interventions that are conducted in person. In their 2012 study, Corrigan et al. found that face-to-face contact with individuals had significantly greater effects on stigma-reduction, as compared to stories that were delivered by videos. Therefore, the outcomes of the current study may not be as strong as they could be if face-to-face interventions were used, especially for those in the contact-based intervention group. However, in order to ensure that all participants in each group would have exactly the same intervention experience, the use of videos was necessary for the present study. In addition, while videos do not appear to be as successful as in person contact, they have still been found to significantly reduce mental disorder stigma (Corrigan et al.), and therefore were perceived to be an effective tool for studying anti-stigma interventions when the study was designed. The videos were also only approximately 10 minutes long, in order for completion of the study to be feasible for participants. Furthermore, the videos were not pilot-tested to determine their effectiveness, and no attention checks were included to determine how much individuals took away from the

videos. Therefore, future research is needed to determine what an effective video length might be, in order to balance potential participant fatigue with intervention success. It would also be advantageous for future studies to include additional ways of examining intervention success (e.g., questions following the video to determine what participants remember from the videos, and whether they gained additional knowledge about mental health, or felt that they had experienced ‘intergroup contact’ from watching the video). In addition, once these video interventions have been piloted tested and deemed successful at reducing mental disorder stigma, it would be advantageous to compare experimental manipulations of video interventions to field studies conducted with actual stigma interventions that are being conducted in workplace settings. These follow up studies would be helpful in order to determine whether the results of lab-based stigma intervention studies can be replicated in a workplace setting, using face-to-face intervention tactics.

Another potential limitation of this study is that it does not provide information on the long-term outcomes of the contact-based or knowledge-based anti-stigma interventions. Currently, little information is known about the effectiveness of anti-stigma interventions over extended periods of time, and it would be particularly helpful when comparing intervention tactics (i.e. contact-based versus knowledge-based) to have an understanding of how these interventions are impacting mental disorder stigma over longer periods of time than just one week. In addition, in his Intergroup Contact Theory, Pettigrew (1998) highlights the importance of time latent measures in his model, as he argues that the different stages of stigma reduction take place in a longitudinal fashion. In line with this suggestion, recent research has begun to examine the potential longitudinal effects of mental disorder stigma interventions with

workplace samples. For instance, Dobson et al. (in press) found support for average effect sizes in stigma reduction (i.e., 0.26-0.38) 3-months following the Mental Health Commission of Canada's workplace anti-stigma interventions. In comparison, Carleton et al. (2018) looked at the outcomes of similar interventions with police officers and found that changes in mental disorder stigma were non-significant at both a 6-month follow-up and 12-month follow-up time period. These results suggest that there is some evidence for long-term outcomes of mental disorder stigma interventions up to three months after the workshops took place, though these effects may no longer be significant by the 6-month follow-up period. More research is needed to replicate these findings, and to determine whether these outcomes are consistent across various workplace samples. Furthermore, these studies did not take into account potential differences between the longevity of knowledge-based stigma intervention outcomes, as compared to contact-based stigma intervention outcomes, or the role that individual differences may play in stigma intervention success over time. Therefore, in order to further test Pettigrew's model and to extend the findings of the current study, it would be expedient for future research to examine the relationship between individual differences, stigma intervention type, and mental disorder stigma over time periods such as three months, six months and a year. This would also allow those who are running anti-stigma intervention workshops in actual workplace settings to have a better understanding of how long the effects of these interventions are lasting following the completion of the workshop, and whether potential follow-up workshops are needed to sustain levels of stigma reduction over time.

## **Conclusion**

In summary, the objective of the present study was to address some of the extant gaps in the mental disorder stigma literature by determining whether individual differences pertaining to personality, intergroup anxiety, empathy, perspective taking, modern prejudice towards people with mental illnesses, SDO and RWA would impact the degree to which individuals experience stigma reduction following anti-stigma interventions. It was determined that each of these individual difference variables impacted stigma prior to receiving the intervention, and that Conscientiousness and Openness to Experience lead to significant decreases in stigma for those in the knowledge intervention group at Time 2, and that Emotionality and Extraversion lead to significant increases in stigma one-week following the intervention for the contact intervention group. Contrary to the study's predictions, no interactions were found between the stigma interventions presented, and levels of individual differences. These null findings may be due in part to a lack of intervention success, as both the contact intervention and the knowledge intervention did not significantly differ from the control group intervention at Time 2 or Time 3.

The results of this study are both empirically and practically important, as they increase the currently limited understanding of the factors that impact individuals' level of stigma, and provide preliminary support for the notion that different interventions may be more effective as a function of the individual. Therefore, these results provide a step towards improving present workplace anti-stigma interventions, and informing the development of additional interventions. Future research endeavors that include obtaining more cohesive and applied samples, the use of an effective intervention (both in experimental studies and field studies), and follow-up assessments over longer periods of time are necessary in order to further examine the

relationship between individual differences and both contact and knowledge-based mental disorder stigma interventions. These interventions can have an enormous impact on organizations and workplaces by mitigating the negative outcomes that stigma has on treatment seeking (Corrigan, 2004), which can reduce the immense financial consequences stemming from losses in productivity and work-related disability claims (Lim et al., 2008; Stephens & Joubert, 2001). Therefore, it is advantageous to continue improving our knowledge regarding stigmatizing behaviors and how they can most effectively be reduced.

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Appendix A

Facts and Themes Across Knowledge & Contact Intervention Videos

<b>Knowledge</b>	<b>Contact</b>
- % of Canadian's with mental illness per year	- % of Canadian's with mental illness per year
- number of Canadians diagnosed with mood/anxiety disorder & contemplated suicide	- number of Canadians diagnosed with mood/anxiety disorder & contemplated suicide
- University of Calgary student stats	- University of Calgary student stats
- depression as 3 <sup>rd</sup> most disabling condition in the world & most disabling in high-income countries	- depression as 3 <sup>rd</sup> most disabling condition in the world & most disabling in high-income countries
- 1/3 seeking help	- 1/3 seeking help
- stigma as key barrier to help seeking	- stigma as key barrier to help seeking
- explanation of stigma in terms of definitions	- explanation of stigma in terms of personal experiences
- examples of labels and stereotypes encountered	- examples of labels and stereotypes encountered
- incorrect belief that should be able to “snap out of it”	- incorrect belief that should be able to “snap out of it”
- internalization of labels (aka self stigma) and impact this has	- internalization of labels (aka self stigma) and impact this has
- one of the best ways to improve mental health is to increase help seeking by reducing stigma	- she was able to receive help for her mental health once she felt like she had support and once she was able to reduce her self stigma
<p>- 4 knowledge points:</p> <ol style="list-style-type: none"> <li>1) people can &amp; do recover</li> <li>2) people are not defined by their mental health</li> <li>3) people w/mental illness can/do have happy and successful lives</li> <li>4) everyone has the potential to take steps to reduce stigma</li> </ol>	<p>- 4 knowledge points:</p> <ol style="list-style-type: none"> <li>1) people can &amp; do recover (explicitly stated &amp; expressed through experiences)</li> <li>2) people are not defined by their mental health (explicitly stated)</li> <li>3) people w/mental illness can/do have happy and successful lives (explained through experiences)</li> <li>4) everyone has the potential to take steps to reduce stigma (explicitly stated)</li> </ol>
- importance of creating a community of support	- importance of creating a community of support
- how treating those as mental illness with an “us” vs. “them” perspective can be damaging to help seeking and treatment	- feeling that she is treated as different and like she shouldn't be having these challenges was a barrier to her seeking help
- stigmatizing attitudes and beliefs are destructive, and can leave a mark of shame that makes people feel different and socially excluded, and is a major barrier to recovery.	- stigmatizing attitudes and beliefs are destructive, and can leave a mark of shame that makes people feel different and socially excluded, and is a major barrier to recovery.

Appendix B

Demographic Questionnaire

**Please answer the following demographic questions:**

1) What is your ethnicity?

Asian; Asian-Canadian (Please specify)	Black; African-Canadian	First Nations; Metis; Inuit	Middle Eastern	White; Caucasian	Other (Please Specify)

2) Were you born in Canada?

Yes	No

3) If you were not born in Canada, what is your birth place?

Birth place:

4) If you were not born in Canada, how many years have you lived in Canada?

Number of Years:

5) What is your most fluent language?

English	Other (Please specify):

6) What is your age?

Please specify:

7) What is your gender?

Male	Female	Prefer not to disclose	You don't have an option that applies to me. I identify as (please specify):

8) What is your marital status?

Single/never married	Married	Widowed	Separated or Divorced	Living with partner/common law

## Appendix C

### HEXACO-PI 100

#### DIRECTIONS

On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then write your response in the space next to the statement using the following scale:

- 5 = strongly agree
- 4 = agree
- 3 = neutral (neither agree nor disagree)
- 2 = disagree
- 1 = strongly disagree

Please answer every statement, even if you are not completely sure of your response.

- 1 I would be quite bored by a visit to an art gallery.
- 2 I clean my office or home quite frequently.
- 3 I rarely hold a grudge, even against people who have badly wronged me.
- 4 I feel reasonably satisfied with myself overall.
- 5 I would feel afraid if I had to travel in bad weather conditions.
- 6 If I want something from a person I dislike, I will act very nicely toward that person in order to get it.
- 7 I'm interested in learning about the history and politics of other countries.
- 8 When working, I often set ambitious goals for myself.
- 9 People sometimes tell me that I am too critical of others.
- 10 I rarely express my opinions in group meetings.
- 11 I sometimes can't help worrying about little things.
- 12 If I knew that I could never get caught, I would be willing to steal a million dollars.
- 13 I would like a job that requires following a routine rather than being creative.
- 14 I often check my work over repeatedly to find any mistakes.
- 15 People sometimes tell me that I'm too stubborn.

- 16 I avoid making "small talk" with people.
- 17 When I suffer from a painful experience, I need someone to make me feel comfortable.
- 18 Having a lot of money is not especially important to me.
- 19 I think that paying attention to radical ideas is a waste of time.
- 20 I make decisions based on the feeling of the moment rather than on careful thought.
- 21 People think of me as someone who has a quick temper.
- 22 I am energetic nearly all the time.
- 23 I feel like crying when I see other people crying.
- 24 I am an ordinary person who is no better than others.
- 25 I wouldn't spend my time reading a book of poetry.
- 26 I plan ahead and organize things, to avoid scrambling at the last minute.
- 27 My attitude toward people who have treated me badly is "forgive and forget".
- 28 I think that most people like some aspects of my personality.
- 29 I don't mind doing jobs that involve dangerous work.
- 30 I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
- 31 I enjoy looking at maps of different places.
- 32 I often push myself very hard when trying to achieve a goal.
- 33 I generally accept people's faults without complaining about them.
- 34 In social situations, I'm usually the one who makes the first move.
- 35 I worry a lot less than most people do.
- 36 I would be tempted to buy stolen property if I were financially tight.
- 37 I would enjoy creating a work of art, such as a novel, a song, or a painting.
- 38 When working on something, I don't pay much attention to small details.
- 39 I am usually quite flexible in my opinions when people disagree with me.
- 40 I enjoy having lots of people around to talk with.
- 41 I can handle difficult situations without needing emotional support from anyone else.
- 42 I would like to live in a very expensive, high-class neighborhood.
- 43 I like people who have unconventional views.
- 44 I make a lot of mistakes because I don't think before I act.
- 45 I rarely feel anger, even when people treat me quite badly.
- 46 On most days, I feel cheerful and optimistic.

- 47 When someone I know well is unhappy, I can almost feel that person's pain myself.
- 48 I wouldn't want people to treat me as though I were superior to them.
- 49 If I had the opportunity, I would like to attend a classical music concert.
- 50 People often joke with me about the messiness of my room or desk.
- 51 If someone has cheated me once, I will always feel suspicious of that person.
- 52 I feel that I am an unpopular person.
- 53 When it comes to physical danger, I am very fearful.
- 54 If I want something from someone, I will laugh at that person's worst jokes.
- 55 I would be very bored by a book about the history of science and technology.
- 56 Often when I set a goal, I end up quitting without having reached it.
- 57 I tend to be lenient in judging other people.
- 58 When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 59 I rarely, if ever, have trouble sleeping due to stress or anxiety.
- 60 I would never accept a bribe, even if it were very large.
- 61 People have often told me that I have a good imagination.
- 62 I always try to be accurate in my work, even at the expense of time.
- 63 When people tell me that I'm wrong, my first reaction is to argue with them.
- 64 I prefer jobs that involve active social interaction to those that involve working alone.
- 65 Whenever I feel worried about something, I want to share my concern with another person.
- 66 I would like to be seen driving around in a very expensive car.
- 67 I think of myself as a somewhat eccentric person.
- 68 I don't allow my impulses to govern my behavior.
- 69 Most people tend to get angry more quickly than I do.
- 70 People often tell me that I should try to cheer up.
- 71 I feel strong emotions when someone close to me is going away for a long time.
- 72 I think that I am entitled to more respect than the average person is.
- 73 Sometimes I like to just watch the wind as it blows through the trees.
- 74 When working, I sometimes have difficulties due to being disorganized.
- 75 I find it hard to fully forgive someone who has done something mean to me.
- 76 I sometimes feel that I am a worthless person.
- 77 Even in an emergency I wouldn't feel like panicking.

- 78 I wouldn't pretend to like someone just to get that person to do favors for me.
- 79 I've never really enjoyed looking through an encyclopedia.
- 80 I do only the minimum amount of work needed to get by.
- 81 Even when people make a lot of mistakes, I rarely say anything negative.
- 82 I tend to feel quite self-conscious when speaking in front of a group of people.
- 83 I get very anxious when waiting to hear about an important decision.
- 84 I'd be tempted to use counterfeit money, if I were sure I could get away with it.
- 85 I don't think of myself as the artistic or creative type.
- 86 People often call me a perfectionist.
- 87 I find it hard to compromise with people when I really think I'm right.
- 88 The first thing that I always do in a new place is to make friends.
- 89 I rarely discuss my problems with other people.
- 90 I would get a lot of pleasure from owning expensive luxury goods.
- 91 I find it boring to discuss philosophy.
- 92 I prefer to do whatever comes to mind, rather than stick to a plan.
- 93 I find it hard to keep my temper when people insult me.
- 94 Most people are more upbeat and dynamic than I generally am.
- 95 I remain unemotional even in situations where most people get very sentimental.
- 96 I want people to know that I am an important person of high status.
- 97 I have sympathy for people who are less fortunate than I am.
- 98 I try to give generously to those in need.
- 99 It wouldn't bother me to harm someone I didn't like.
- 100 People see me as a hard-hearted person.



## Appendix D

### Intergroup Anxiety Questionnaire

Please rate the extent you feel (or would feel) each emotion when interacting with **someone who has a mental illness** by circling the correct number.

1) ill at ease:	1	2	3	4	5	6	7	8	9	10
Not ill at ease at all										Extremely ill at ease

2) threatened:	1	2	3	4	5	6	7	8	9	10
Not threatened at all										Extremely threatened

3) anxious:	1	2	3	4	5	6	7	8	9	10
Not anxious at all										Extremely anxious

4) worried:	1	2	3	4	5	6	7	8	9	10
Not worried at all										Extremely worried

5) nervous:	1	2	3	4	5	6	7	8	9	10
Not nervous at all										Extremely nervous

6) self-conscious:	1	2	3	4	5	6	7	8	9	10
Not self-conscious at all										Extremely self-conscious

7)	disapproval:	1	2	3	4	5	6	7	8	9	10
	No disapproval at all										Extreme disapproval

8)	unsafe:	1	2	3	4	5	6	7	8	9	10
	Not unsafe at all										Extremely unsafe

9)	awkward:	1	2	3	4	5	6	7	8	9	10
	Not awkward at all										Extremely awkward

10)	uncomfortable:	1	2	3	4	5	6	7	8	9	10
	Not uncomfortable at all										Extremely uncomfortable

11)	unsure:	1	2	3	4	5	6	7	8	9	10
	Not unsure at all										Extremely unsure

12)	confident:	1	2	3	4	5	6	7	8	9	10
	Not confident at all										Extremely confident

13)	trusting:	1	2	3	4	5	6	7	8	9	10
	Not trusting at all										Extremely trusting

14)	unfriendly:	1	2	3	4	5	6	7	8	9	10
	Not unfriendly at all										Extremely unfriendly

## Appendix E

### Mental Illness Opinions Survey (Modern Prejudice)

The next few questions ask you to agree or disagree with a series of statements. Please check the box that best fits your opinion.

		Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1	Over the past few years, the government and news media have shown more respect to people with mental illnesses than they deserve.					
2	It is easy to understand the anger of people with mental illnesses in Canada.					
3	Discrimination against people with mental illnesses is no longer a problem in the Canada.					
4	Over the past few years, people with mental illnesses have gotten more economically than they deserve.					
5	People with mental illnesses have more influence on government policies than they ought to have.					
6	People with mental illnesses are getting too demanding in their push for equal rights.					
7	People with mental illnesses should not push themselves where they are not wanted.					

## Appendix F

### Attitudes and Opinions About Myself

Please rate the extent to which each sentence describes yourself by checking the appropriate box.

		Does not describe me well 1	2	3	4	Describes me well 5
1	I often have tender, concerned feelings for people less fortunate than me.					
2	I sometimes find it difficult to see things from the "other guy's" point of view.					
3	Sometimes I don't feel sorry for other people when they are having problems.					
4	I try to look at everybody's side of a disagreement before I make a decision.					
5	When I see someone being taken advantage of, I feel kind of protective toward them.					
6	I sometimes try to understand my friends better by imagining how things look from their perspective.					
7	Other people's misfortunes do not usually disturb me a great deal.					
8	If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.					
9	When I see someone being treated unfairly, I sometimes don't feel very much pity for them.					
10	I am often quite touched by things that I see happen.					
11	I believe that there are two sides to every question and try to look at them both.					
12	I would describe myself as a pretty soft-hearted person.					
13	When I'm upset at someone, I usually try to "put myself in his/her shoes" for a while.					
14	Before criticizing somebody, I try to imagine how I would feel if I were in their place.					

## Appendix G

### Right Wing Authoritarianism Scale

This survey is part of an investigation of general public opinion concerning a variety of social issues. You will probably find that you agree with some of the statements, and disagree with others, to varying extents. Please indicate your reaction to each statement according to the following scale:

- 4 = You very strongly disagree with the statement.
- 3 = You strongly disagree with the statement.
- 2 = You moderately disagree with the statement.
- 1 = You slightly disagree with the statement.
- 0 = You feel exactly and precisely neutral about the statement.
- 1 = You slightly agree with the statement.
- 2 = You moderately agree with the statement.
- 3 = You strongly agree with the statement.
- 4 = You very strongly agree with the statement.

Important: You may find that you sometimes have different reactions to different parts of a statement. For example, you might very strongly disagree (“-4”) with one idea in a statement, but slightly agree (“+1”) with another idea in the same item. When this happens, please combine your reactions, and [record] how you feel on balance (a “-3” in this case).

- 1) The established authorities generally turn out to be right about things, while the radicals and protestors are usually just “loud mouths” showing off their ignorance.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

- 2) Women should have to promise to obey their husbands when they get married.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

3) Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

4) Gays and lesbians are just as healthy and moral as anybody else.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

5) It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people's minds.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

6) Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

7) The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

8) There is absolutely nothing wrong with nudist camps.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

9) Our country *needs* free thinkers who have the courage to defy traditional ways, even if this upsets many people.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

10) Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

11) Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

12) The “old-fashioned ways” and the “old-fashioned values” still show the best way to live.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

13) You have to admire those who challenged the law and the majority's view by protesting for women's abortion rights, for animal rights, or to abolish school prayer.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

14) What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

15) Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the "normal way things are supposed to be done."

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

16) God's laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree

17) There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very								Very
Strongly								Strongly
Disagree								Agree



18) A “woman’s place” should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

19) Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the “rotten apples” who are ruining everything.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

20) There is no “one right way” to live life; everybody has to create their own way.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

21) Homosexuals and feminists should be praised for being brave enough to defy “traditional family values.”

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

22) This country would work a lot better if certain groups of troublemakers would just shut up and accept their group’s traditional place in society.

- 4	- 3	- 2	- 1	0	1	2	3	4
Very Strongly Disagree								Very Strongly Agree

## Appendix H

### Social Dominance Orientation Scale

The next few questions ask you to agree or disagree with a series of statements. Please check the response that best fits your opinion. *Keep in mind that all answers are confidential, so please answer as honestly as you can.*

1)	Some groups of people are simply inferior to other groups:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
2)	In getting what you want, it is sometimes necessary to use force against other groups:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
3)	It's OK if some groups have more of a chance in life than others:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
4)	To get ahead in life, it is sometimes necessary to step on other groups:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
5)	If certain groups stayed in their place, we would have fewer problems:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree

6)	It's probably a good thing that certain groups are at the top and other groups are at the bottom:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
7)	Inferior groups should stay in their place:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
8)	Sometimes other groups must be kept in their place:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
9)	It would be good if groups could be equal:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
10)	Group equality should be our ideal:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
11)	All groups should be given an equal chance in life:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree
12)	We should do what we can to equalize conditions for different groups:	1	2	3	4	5	6	7
		Strongly Disagree						Strongly Agree

13) We should have increased social equality:

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

14) We would have fewer problems if we treated people more equally:

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

15) We should strive to make incomes as equal as possible:

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

16) No one group should dominate in society:

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

## Appendix I

### Opening Minds Survey for Workplace Attitudes (OMS-WA) – Adapted for Post-Secondary

#### Setting

##### MHCC Mental Illness Attitudes Questionnaire

This survey was developed to assess opinions towards people who may have a mental illness. There are no right or wrong answers to these questions, as everyone will have different attitudes and opinions, based on their own experiences in life.

Read of the following statements, and decide how much you to agree or disagree with that statement. Place an "X" in the correct column to indicate your response for each item.

		Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
1	I would be upset if someone with a mental illness always sat next to me in class.					
2	Most people with a mental illness are too disabled to work.					
3	I would not want to be supervised by someone who had been treated for a mental illness.					
4	I would not be close friends with someone I knew who had a mental illness.					
5	People with a mental illness tend to bring it on themselves.					
6	The quality of the work performed by people with a mental illness is unlikely to meet the expectations of the job.					
7	Jobs with tight deadlines and high demands are harmful to people with a mental illness.					
8	I would try to avoid someone with a mental illness.					
9	People with a mental illness could snap out of it if they wanted to.					
10	People with a mental illness are often more dangerous than the average person.					
11	It would be better for people with a mental illness to participate in work activities that are outside of the paid labour market.					

Read of the following statements, and decide how much you to agree or disagree with that statement. Place an "X" in the correct column to indicate your response for each item.

		Strongly Disagree 1	Disagree 2	Unsure 3	Agree 4	Strongly Agree 5
12	If I knew someone who had a mental illness I would not date them.					
13	People with a mental illness often become violent if not treated.					
14	I would not want to be taught by a teacher who had been treated for a mental illness.					
15	Most violent crimes are committed by people with a mental illness.					
16	I would tell a teacher if a student was being bullied because of their mental illness.					
17	You can't rely on someone with a mental illness.					
18	I would stick up for someone who had a mental illness if they were being teased.					
19	You can never know what someone with a mental illness is going to do.					
20	I would tutor a classmate who got behind in their studies because of their mental illness.					
21	Most people with a mental illness get what they deserve.					
22	I would volunteer my time to work in a program for people with a mental illness.					
23	People with a serious mental illness need to be locked away.					

## Appendix J

### Social Distance Scale

#### Mental Illness Survey

Place an "X" in the correct column for each item to indicate your response.

		I certainly would not 1	2	3	4	I certainly would 5
1	I would speak to someone with a mental illness if we passed each other on the street.					
2	I would have lunch with someone with a mental illness.					
3	I would do school work with someone with a mental illness.					
4	I would go to a party at the home of someone with a mental illness.					
5	I would invite someone with a mental illness to my home.					
6	I would take a job were someone with a mental illness is working.					
7	I would move into a home next door to someone with a mental illness.					
8	I would become a friend with someone with a mental illness.					
9	I would rent a room to someone with a mental illness.					
10	I would recommend someone with a mental illness for a job.					
11	I would support having my sibling or my child marry someone with a mental illness.					
12	I would trust someone with a mental illness to look after my child.					

## Appendix K

### Example Syntax for Bayesian Latent Change Score Regression Analysis

VARIABLE: NAMES = DataSource

Age  
Gender  
Contact  
Knowledge  
Control  
All\_Inter  
T1\_OMSWA  
T1\_SD  
T1\_STIGMA  
IAQ  
Empathy  
PT  
PREJUDICE  
RWA  
SDO  
HH  
E  
eX  
A  
C  
O  
T2\_OMSWA  
T2\_SD  
T2\_STIGMA  
T2\_Anxious  
T3\_OMSWA  
T3\_SD  
T3\_STIGMA  
T3\_Anxious;

MISSING ARE ALL (9999);

USEVARIABLES ARE T1\_STIGMA  
T2\_STIGMA  
IAQ  
Empathy  
PT  
PREJUDICE  
HH



E  
eX  
A  
C  
O;

ANALYSIS:

COVERAGE = 0.000001;  
ITERATIONS = 10000;  
ESTIMATOR = BAYES;  
FBITERATIONS = 20000;  
POINT = MEAN;  
PROCESS = 4;

MODEL:

!defining the main factors by fixing the loadings of each indicator to 1  
T1STIGMA by T1\_STIGMA@1;  
T2STIGMA by T2\_STIGMA@1;

!fixing the uniqueness of the indicators to their unreliability or  $((1-\alpha)*\epsilon^2)$   
T1\_STIGMA@.017179;  
T2\_STIGMA@.01628;

!fixing the intercepts of the indicators to zero  
[T1\_STIGMA@0];  
[T2\_STIGMA@0];

!setting up the latent change factor for stigma  
Initialc by T1STIGMA@1;  
Changec by T2STIGMA@1;  
T1STIGMA@0;  
T2STIGMA@0;

T2STIGMA on T1STIGMA@1;

[T1STIGMA@0];  
[T2STIGMA@0];

!correlating initial and change factors  
Initialc with Changec;

!estimating the regression coefficients (on statement) or correlation (with statement)  
Changec ON IAQ  
Empathy

PT  
PREJUDICE  
HH  
E  
eX  
A  
C  
O;

OUTPUT:  
SAMPSTAT STANDARDIZED CINTERVAL TECH4 TECH8;

## Appendix L

### Example Syntax for Bayesian Mixture Change Score Regression Analysis

VARIABLE: NAMES = DataSource

Age  
Gender  
Contact  
Knowledge  
Control  
All\_Inter  
T1\_OMSWA  
T1\_SD  
T1\_STIGMA  
IAQ  
Empathy  
PT  
PREJUDICE  
RWA  
SDO  
HH  
E  
eX  
A  
CON  
O  
T2\_OMSWA  
T2\_SD  
T2\_STIGMA  
T2\_Anxious  
T3\_OMSWA  
T3\_SD  
T3\_STIGMA  
T3\_Anxious;

MISSING ARE ALL (9999);

USEVARIABLES ARE T1\_STIGMA  
T2\_STIGMA  
IAQ  
Empathy  
PT  
PREJUDICE  
HH

```

E
eX
A
CON
O
DataSource;

CLASSES=C(3);

KNOWNCLASS=C(All_Inter=1 All_Inter=2 All_Inter=3);

ANALYSIS:
TYPE=MIXTURE;
COVERAGE = 0.000001;
ITERATIONS = 10000;
ESTIMATOR = ML;
FBITERATIONS = 10000;
POINT = MEAN;
PROCESS = 4;

MODEL:
%OVERALL%
!defining the main factors by fixing the loadings of each indicator to 1
T1STIGMA by T1_STIGMA@1;
T2STIGMA by T2_STIGMA@1;

!fixing the uniqueness of the indicators to their unreliability or  $((1-\alpha)^2)$ 
T1_STIGMA@.017179;
T2_STIGMA@.01628;

!fixing the intercepts of the indicators to zero
[T1_STIGMA@0];
[T2_STIGMA@0];

!setting up the latent change factor for stigma
Initialc by T1STIGMA@1;
Changec by T2STIGMA@1;
T1STIGMA@0;
T2STIGMA@0;

T2STIGMA on T1STIGMA@1;

[T1STIGMA@0];
[T2STIGMA@0];

```

!correlating initial and change factors  
Initialc with Changeec;

!estimating the regression coefficients (on statement) or correlation (with statement)

Changeec ON IAQ

Empathy

PT

PREJUDICE

HH

E

eX

A

CON

O;

Changeec with DataSource;

%C#1%

!defining the main factors by fixing the loadings of each indicator to 1

T1STIGMA by T1\_STIGMA@1;

T2STIGMA by T2\_STIGMA@1;

!fixing the uniqueness of the indicators to their unreliability or  $((1-\alpha)^2)$

T1\_STIGMA@.017179;

T2\_STIGMA@.01628;

!fixing the intercepts of the indicators to zero

[T1\_STIGMA@0];

[T2\_STIGMA@0];

!setting up the latent change factor for stigma

Initialc by T1STIGMA@1;

Changeec by T2STIGMA@1;

T1STIGMA@0;

T2STIGMA@0;

T2STIGMA on T1STIGMA@1;

[T1STIGMA@0];

[T2STIGMA@0];

!correlating initial and change factors

Initialc with Changeec;

!estimating the regression coefficients (on statement) or correlation (with statement)

Changec ON IAQ

Empathy

PT

PREJUDICE

HH

E

eX

A

CON

O;

Changec with DataSource;

%C#2%

!defining the main factors by fixing the loadings of each indicator to 1

T1STIGMA by T1\_STIGMA@1;

T2STIGMA by T2\_STIGMA@1;

!fixing the uniqueness of the indicators to their unreliability or  $((1-\alpha)*\epsilon^2)$

T1\_STIGMA@.017179;

T2\_STIGMA@.01628;

!fixing the intercepts of the indicators to zero

[T1\_STIGMA@0];

[T2\_STIGMA@0];

!setting up the latent change factor for stigma

Initialc by T1STIGMA@1;

Changec by T2STIGMA@1;

T1STIGMA@0;

T2STIGMA@0;

T2STIGMA on T1STIGMA@1;

[T1STIGMA@0];

[T2STIGMA@0];

!correlating initial and change factors

Initialc with Changec;

!estimating the regression coefficients (on statement) or correlation (with statement)

Changec ON IAQ

Empathy  
PT  
PREJUDICE  
HH  
E  
eX  
A  
CON  
O;

Changec with DataSource;

%C#3%

!defining the main factors by fixing the loadings of each indicator to 1  
T1STIGMA by T1\_STIGMA@1;  
T2STIGMA by T2\_STIGMA@1;

!fixing the uniqueness of the indicators to their unreliability or  $((1-\alpha)*\epsilon^2)$   
T1\_STIGMA@.017179;  
T2\_STIGMA@.01628;

!fixing the intercepts of the indicators to zero  
[T1\_STIGMA@0];  
[T2\_STIGMA@0];

!setting up the latent change factor for stigma  
Initialc by T1STIGMA@1;  
Changec by T2STIGMA@1;  
T1STIGMA@0;  
T2STIGMA@0;

T2STIGMA on T1STIGMA@1;

[T1STIGMA@0];  
[T2STIGMA@0];

!correlating initial and change factors  
Initialc with Changec;

!estimating the regression coefficients (on statement) or correlation (with statement)  
Changec ON IAQ  
Empathy  
PT  
PREJUDICE

HH  
E  
eX  
A  
CON  
O;

Changec with DataSource;

OUTPUT:  
SAMPSTAT STANDARDIZED CINTERVAL TECH4 TECH8;