Perceptions of transgender populations: An educational module to increase knowledge and reduce negative attitudes

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University of Northern Iowa

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PERCEPTIONS OF TRANSGENDER POPULATIONS: AN EDUCATIONAL MODULE TO INCREASE KNOWLEDGE AND REDUCE NEGATIVE ATTITUDES

An Abstract of a Thesis
Submitted
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Dacia Kay Oberhelman
University of Northern Iowa
May 2017
Individuals who identify as transgender experience subtle and direct forms of negative attitudes and discrimination. These attitudes and discrimination remain despite the large improvement in attitudes toward sexual minorities over the last few decades. Recent research related to transgender populations largely focuses on examining the existing attitudes, rather than attempts to reduce these negative attitudes. In the current study, we aimed to increase knowledge about transgender populations and reduce negative attitudes (e.g., Social Distance, Negative Affective, and Attitudes Toward Transgender Populations) by employing an online psychoeducational intervention module. This study assessed a 25-minute online psychoeducational module designed to increase knowledge and reduce the stigma of transgender populations in an efficient and generalizable way. The module surveyed 221 college students from a public Midwestern university where participants were randomly assigned to one of two groups; a module group and a control group. Potential changes in attitudes were assessed with pre- and post-test attitude measures as well as a pre- and post-test knowledge measure. Furthermore, we examined the role of contact and familiarity on stigma. We also investigated the role of a biological explanation of transgender on attitudes and stigma towards transgender populations. Our results show that knowledge increased from pre- to post-test for the experimental group. However, findings for stigma and negative attitudes are somewhat inconsistent suggesting stigma is a difficult construct to change. A better understanding of the efficacy and use of educational interventions will not only be beneficial for the future
of transgender populations, but also for any population that experiences stigma and
discrimination. This study adds to transgender stigma literature as well as identifies a
technique that is useful for improving knowledge and may be effective in reducing
stigma and negative attitudes.

Keywords: Transgender, Stigma, Intervention, Psychoeducation, Knowledge
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has been approved as meeting the thesis requirement for the

Degree of Master of Arts

Date Dr. Dilbur D. Arsiwalla, Chair, Thesis Committee

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Date Dr. Kavita R. Dhanwada, Dean, Graduate College
DEDICATION

To my wonderful parents, for whom I have the utmost respect, all of this and all that I am would not be possible without your unwavering support and unconditional love.
ACKNOWLEDGMENTS

I would like to express my deepest gratitude to Dr. Dilbur Arsiwalla for her continued support throughout this process, her patience in helping me learn, and her invaluable mentorship throughout both my undergraduate and graduate career. My deepest thanks to you, Dr. Arsiwalla.

I would also like to thank my committee members for their feedback and guidance throughout this journey.

Lastly, to my cohort members, my family members, and my closest friends: thank you for being there every step of the way.
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CHAPTER 1
INTRODUCTION

Overview and Terms

Although the prevalence of transgender individuals in the US population is small (0.03–0.05%), it is critical to understand how to improve negative attitudes toward this population (Conron, Scott, Stowell, & Landers, 2012; Gates, 2011), given the increase in reports and visibility of transgender populations in society and the effects that stigma has on their overall well-being. ‘Transgender’ is an umbrella term that refers to individuals whose gender identity does not match their assigned sex at birth (Centers for Disease Control and Preventions [CDC], 2017; National Center for Transgender Equality [NCTE], 2015b). As transgender populations are becoming more visible in our society, it is crucial to understand the negative attitudes toward them and focus on measures to reduce and improve negative attitudes. Furthermore, given the sparse literature on transgender populations, and even fewer studies on interventions to improve attitudes toward transgender populations, there is a need for research that addresses the negative perceptions towards this population and informs intervention efforts and policy decisions that may provide them with equal rights.

Gender, at times, is a perplexing subject that encompasses many different terms, which are crucial to understand in order to fully represent all individuals. To better understand what this study will address and investigate, the basic definitions of gender and other important terminology relevant to this study will be addressed in the following section. To begin, gender can be described as a socially constructed term
that categorizes persons based on masculine and feminine traits as defined by society, while sex refers to the biological makeup of a person’s body (i.e., male, female, intersex, or transgender; Stringer, 2013). Cisgender, a term that will be used often throughout this document, refers to a person who identifies as the same sex that was assigned at birth, which also aligns with their gender identity, while transgender, as discussed previously, is an umbrella term used to refer to individuals whose gender identity does not match their assigned sex at birth (CDC, 2017; NCTE, 2015b; Stringer, 2013).

Throughout this document different terms will also be used to describe the negativity that sexual minorities, or LGBT (Lesbian, Gay, Bisexual, and Transgender) individuals, are exposed. These terms, like gender terms, are also important to understand because each word has a different but similar meaning. In this document, stigma directed toward sexual minority populations is defined as the ‘‘negative regard, inferior status, and relative powerlessness that society collectively accords to any nonheterosexual behavior, identity, relationship, or community’’ (Herek, Cogan, & Gillis, 2009, p. 906). However, bias refers to favoring a group or persons more, and discrimination refers to the unjust or unfair treatment of a group or persons. Two types of attitudes are discussed in this document; prejudicial attitudes and negative attitudes. Prejudicial attitudes, in this document refers to, ‘‘the negative valuing, stereotyping, and discriminatory treatment of individuals whose appearance and/or identity does not conform to the current social expectations or conventional
conceptions of gender” (King, Winter, & Webster, 2009, pg. 20), while negative attitudes encompass and include prejudicial attitudes.
CHAPTER 2

REVIEW OF LITERATURE

Past Literature Examining Attitudes of LGBT Populations

Many factors that predict negative attitudes toward gay and lesbian populations are also predictors of negative attitudes toward transgender populations (Nagoshi et al., 2008). This is expected because many individuals who hold negative attitudes toward gay men and lesbians believe that homosexuality is immoral (Drescher, 2015), which is also a belief that many hold about transgender individuals, suggesting that many negative attitudes toward transgender populations come from a belief that “transgender behavior” is immoral or obscene. Other research suggests certain individual factors predict more negative attitudes. For instance, research on attitudes toward transgender and homosexual populations have shown that men have more negative attitudes than women (Barringer, Gay, & Lynxwiler, 2013; Costa & Davies, 2012; Norton & Herek, 2012; Winter, Webster, & Cheung, 2008; Worthen, 2012). Certain factors have been associated with negative attitudes towards gay men and women. Specifically, these include authoritarianism attitudes (Norton & Herek, 2012), higher degrees of religiosity (Barringer et al., 2013; Norton & Herek, 2012), being politically conservative (Norton & Herek, 2012; Woodford, Silverschantz, Swank, Scherrer, & Raiz, 2012), lower education (Norton & Herek, 2012), and affiliation with a college student organization such as a fraternity or sorority (Worthen, 2013).
Furthermore, with increased negative affect that individuals may have toward stigmatized populations, social distance tends to increase, in turn decreasing the amount of contact one may have with the target population (Penn et al., 1994). Similar to increased social distance with increased negative affect, the devaluation and discrimination of a population also tends to increase with increased negative affect (Link, Cullen, Struening, Shrout, & Dohrenwend, 1989).

Negative Outcomes for Transgender Populations Due to Stigma

Although overall negative attitudes toward transgender populations have improved in recent years, stigma of transgender populations is still prevalent (Grant, Mottet, & Tanis, 2011; Landen & Innala, 2000). Stigma toward transgender populations can also be identified as transphobia (Hill & Willoughby, 2005). More specifically, transphobia can be defined as “an emotional disgust toward individuals who do not conform to society’s gender expectations” (Hill & Willoughby, p. 533, 2005). One who has transphobic emotions does not have a clinical diagnosis, but the phobia is used to define the illogical and unreasonable fear or hatred that one experiences (Hill & Willoughby, 2005). Since stigma toward transgender populations, and transphobia, is based largely on the nonconformity to cultural gender norms, many of the constructs to identify these attitudes are based on genderism (Hill & Willoughby, 2005). Thus, suggesting the need for stigma measures created with different constructs than general stigma measures. Additionally, the stigma that transgender populations experience has many similarities to other types of stigma, and takes place in many different settings and many different forms, ranging from
bullying in schools to discrimination in the workplace (Grant et al., 2011). Stigma not
only happens in many diverse settings but can also be overt or covert (Grant et al.,
2011). According to Grant et al. (2011), 23% of transgender individuals have been
exposed to three or more significantly impairing acts of discrimination, and 63% of
those who identify as transgender have been exposed to at least one act of
significantly impairing discrimination. Significantly impairing discrimination, or
“events that would have a major impact on a person’s quality of life and ability to
sustain themselves financially or emotionally” (p. 8) takes many forms such as job
loss due to bias, eviction due to bias, school bullying/harassment so severe the
individual had to drop out, teacher bullying, or physical assault due to bias (Grant et
al., 2011). Other forms of discrimination include sexual assault due to bias,
homelessness because of gender identity/expression, lost relationships with a partner
or children due to gender identity/expression, denial of medical service due to bias, or
incarceration due to gender identity/expression (Grant et al., 2011). These forms of
discrimination have multiple effects on transgender individuals’ health and well-
being, further supporting the need for intervention.

Attitude Change

To better understand how negative attitudes can be improved, the definition
and the concept of how attitudes change must be understood. An attitude can be
described as, “an evaluation of an object of thought” (Bohner & Dickel, 2011, p.
392). Furthermore, Olson and Zanna (1993) explained that attitudes are defined
“primarily in terms of evaluation, affect, cognition, and behavioral predispositions”
Attitude change, however, can be described as the retrieval of our past evaluations, affect, cognitions, and behaviors and a consideration of new information (Bohner & Dickel, 2011; Olson & Zanna, 1993). Attitude change typically occurs from exposure to new information and consideration of that information (Olson & Zanna, 1993). This information is usually acquired through written or spoken messages (Olson & Zanna, 1993). Furthermore, Olson and Zanna (1993) suggested that a predictor of attitude change is the strength of the argument and the source of the information. The strength of the argument and the source from which new information is received can impact the likelihood of attitudes changing or the likelihood of information being persuasive (Olson & Zanna, 1993), implying that sources that are viewed as more trustworthy, and are greater in argument strength, will have a greater likelihood of changing or persuading attitudes. Based on the prior intervention research, it is expected that the current study, which employs an empirically created educational intervention, will have a higher probability of reducing negative attitudes. Although changing attitudes is difficult, we do not expect to change biases or stereotypes that participants may have. We do expect to improve negative attitudes that may be held in the hopes of reducing stigma.

Stigma

Part of improving attitudes is understanding the stigma that motivates those negative attitudes. Understanding the stigma that transgender individuals face and the lack of interventions available to improve knowledge about this population are crucial to decreasing the stigma this group faces. Goffman (1963) explained that stigma is a
characteristic that decreases an individual's value significantly, and adversely changes the way they are viewed. Stigma can also be identified as experienced negative affect, attitudes, actions, and disparity (Crabtree, Haslam, Postmes, & Haslam, 2010).

Goffman (1963) posited that stigma is most commonly experienced by those who are perceived as less than others in some characteristic. Furthermore, Crocker, Major, and Steele (1998), similar to Goffman (1963), explained that stigma takes place when an individual has “some attribute or characteristic that conveys a social identity that is devalued in a particular social context” (p. 505). This would suggest that those individuals who are stigmatized (e.g., transgender individuals) have a characteristic or quality that is viewed as unfavorable or “marks them as different” (Major & O’Brien, 2005, p. 395). This perception, in turn, leads individuals of the nonstigmatized group to view the stigmatized group or individual as insignificant or less important (Major & O’Brien, 2005). Furthermore, stigma is not necessarily found within a particular person but is found within socially created conditions (Major & O’Brien, 2004). Once a stereotype or negative belief about a group is built, this group quickly becomes easily recognized within a culture, generating a reason for unstigmatized groups or individuals to dissociate themselves with this group (Crocker et al. 1998; Major & O’Brien, 2005). Socially created contexts of stigma further emphasize the need to reduce the negative attitudes toward transgender populations that can be found within a culture. Not addressing stigma within socially created contexts, and within society, will further perpetuate and maintain current stigma levels. Furthermore,
understanding the stigma that transgender populations endure will facilitate the creation of more effective intervention techniques.

**Ingroup vs. outgroup members.** Ingroup and outgroup categorization are key concepts important to understanding stigma toward transgender populations. Categorization of ingroup and outgroup members underlies the basic skills for decision making in social contexts (Brewer, 2007). Categorization also allows for structure and clarity of one’s perceived environment (Brewer, 2007). Categorization and the differences in those categories can lead to influences on persons’ behaviors and interpretations of others (Brewer, 2007), thus resulting in a person’s creation of ingroups and outgroups. The creation of ingroups and outgroups can also lead to the development of prejudice toward groups that one views differently from themselves.

**Outgroup prejudice.** Outgroup prejudice can contribute to an explanation of stigma and prejudicial attitudes toward transgender populations. The central theory of prejudice that is related to negative attitudes and prejudice toward transgender populations is outgroup prejudice. Ingroups are individuals that one defines as similar to themselves in basic ways such as cognitions, attitudes, or behaviors (Brewer, 2007). Outgroups are groups that are regarded as “not-me,” or when an individual actively does not associate themselves with a group (Brewer, 2007). However, to recognize oneself as different from an outgroup, one must self-identify or have a part of themselves invested in an ingroup (Brewer, 2007). Outgroup prejudice is further accompanied by more negative attitudes and prejudice from the ingroup directed toward the outgroup members (Brewer, 2007). Therefore, those who identify as
transgender and are regarded as the outgroup, experience more negative attitudes and prejudice than if they were to be regarded as a part of the ingroup. Transgender individuals are more likely to be considered as outgroup members, and be recipients of more overt and identifiable stigma, because of the low prevalence of those who identify as transgender, the higher likelihood of those who do not identify as transgender to not associate themselves with this group, and the easily identifiable nature of some members of this group. Some individuals may often display prejudice or negative attitudes due to the perception of threat (Brewer, 2007). This threat perception further indicates and emphasizes the importance of increasing contact and familiarity, as well as creating methods to eliminate transgender stigma.

Contact hypothesis. Prior research on stigma has focused on marginalized groups, such as individuals with mental illnesses or those who manifest substance use problems. Some of this research has examined contact with the stigmatized group as a correlate of lower prejudice (e.g., Brown, 2012; Strong & Arsiwalla, 2016). According to the contact hypothesis, the stigma, prejudicial attitudes, and actions toward an outgroup population (e.g., transgender populations) can be reduced with higher levels of contact (Allport, 1954; Brewer, 2007). Overt aggressive behaviors and negative attitudes demonstrated by the ingroup members are created based on a lack of familiarity and contact with outgroup members (Allport, 1954; Brewer, 2007). Brewer (2007) emphasized that exposure to outgroup members while keeping the circumstances in mind, can reduce negative attitudes.
Research focused on stigma toward mental illness has demonstrated that previous contact with mentally ill populations predicts less perceived dangerousness and social distance (Brown, 2012). Contact that is both personal and professional has been found to decrease stigma (Alexander & Link, 2003). Furthermore, both voluntary and involuntary contact reduces stigma similarly (Alexander & Link, 2003). This suggests that whether an individual has direct contact with a stigmatized individual or is provided knowledge about issues faced by a marginalized population, via an educational module, both may be effective forms of intervention (Alexander & Link, 2003). Although we do not have data on the effects of providing accurate and educational information, they may be powerful instruments to help reduce stigma via contact (Alexander & Link, 2003). For instance, previous contact with those that had a mental illness was not only related to a decrease in stigma, but also was linked to a decline in perceived dangerousness, and increased previous contact was also associated with less social distance (Brown, 2012).

Past research that has focused on reducing negative attitudes toward outgroups or marginalized groups using contact, or a form of contact, has mainly focused on mental illness stigma (Alexander & Link, 2003; Brown 2010; Brown, 2012; Brown, Evans, Espenschade, & O’Connor, 2010; Chan, Mak, & Law, 2009). For example, Alexander and Link (2003) demonstrated with vignettes, that with increased contact, the overall perceived dangerousness and social distance of participants decreased, similar to Brown (2012). Furthermore, the type of contact did not matter; contact, in general, was found to decrease perceived dangerousness and social distance.
Contact was experienced by participants (i.e., family contact, friend/spouse contact, public contact, and work contact) in four different ways to better understand if one type of contact experienced by participants served to be more effective than another (Alexander & Link, 2003). Different types of contact were used to better understand if the type of contact significantly differed in predicting reduced feelings of dangerousness and social distance (Alexander & Link, 2003).

Additionally, Chan et al. (2009) used education and video-based contact to reduce mental illness stigma among high school students in Hong Kong. Chan et al. (2009) reported that the intervention group that presented educational information first followed by the video-based contact showed the greatest improvements in attitudes, but there were no intervention group differences for knowledge. Although there were significant attitude changes from pre- to post-test, Chan et al. (2009) expressed that attitude changes at a 1-month follow-up were small. These results suggest that with different mediums of contact, and with the implementation of education, negative attitudes can be reduced. Although reductions in negative attitudes may be small at study follow-ups, further exposure via contact or education may be effective in reducing attitudes in the long term.

**Level of familiarity.** The level of familiarity, similar to contact, can be defined as one’s degree of experience or how much one is acquainted with a certain population (Costa & Davies, 2012). Although familiarity is similar to contact, they can be distinguished in that familiarity refers more to what type of events one has
interacted or experienced with the target population, and contact refers more to how
often one has interacted with someone of the target population (Brown, 2011,
Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003). Just as with contact,
research suggests that those who have a higher degree of familiarity with the target
population will have a greater likelihood of positive attitudes toward transgender
populations (Costa & Davies, 2012).

Past research with gay men and lesbians also suggested, increased familiarity
with gay and lesbian communities predict more favorable or positive attitudes
(Altemeyer, 2002). Not only does the familiarity hypothesis suggest that increased
familiarity will lead to more positive attitudes toward LGBT populations, but also
that increased familiarity with mental illness can lead to more positive and tolerable
attitudes toward individuals diagnosed with a mental illness (Corrigan et al., 2003).
Corrigan et al. (2003) demonstrated that those who reported higher levels of
familiarity with mental illness had more favorable views of mental illness and less
endorsement of discrimination toward mental illness. Furthermore, individuals who
had a higher degree of familiarity with mental illness also tended to report that mental
illness was not something that an individual can control (Corrigan et al., 2003). We
hope that by further investigating the relationship between familiarity and transgender
stigma, we can better understand how to reduce negative attitudes and beliefs.

The Effects of Stigma

Transgender individuals do not identify with their sex assigned at birth and are
therefore regarded as socially deviant and stigmatized by outgroup members (NCTE,
The effects of this stigma include but are not limited to, a higher rate of attempting and committing suicide, being sexually and physically assaulted, being unethically fired, and experiencing police violence at a much higher rate (Grant et al., 2011). Those who identify as transgender are more likely to live in poverty, earning $10,000 less than the general population (Grant et al., 2011). Rates of suicide attempts are much higher among them than the general population; 41% of transgender individuals are likely to attempt suicide, while the likelihood of attempting suicide in the general population is much lower (1.6%; Grant et al., 2011). Additionally, those who identify as transgender are subjected to much higher rates of physical and sexual harassment, job loss due to bias, and unstable economic and home lives (Grant et al., 2011). When discussing sexual harassment, transgender individuals are 3.7 times more likely to be sexually assaulted than cisgender individuals, or someone who identifies as the gender they were assigned at birth (e.g., male, female), and 66% of survivors are likely to be victims again (National Coalition of Anti-Violence Programs [NCAVP], 2013; Office for Victims of Crime [OVC], 2014). Transgender persons were also seven times more likely to experience police violence than cisgender individuals (NCAVP, 2013). The constant discrimination, living in fear of violence, and lack of access to services and health care makes the effects of the stigma that transgender populations face extremely harmful, perhaps even more so than those who have equal access to services and health care.

Many of these violent acts are identified as hate crimes and cannot, therefore, be regarded as random acts. Hate crimes toward transgender individuals can be
described as, “Acts of hate violence, such as harassment, stalking, vandalism, and physical and sexual assault, are often supported by more socially sanctioned expressions of transphobia, biphobia, and homophobia and are intended to send a message to LGBTQ communities . . .” (NCAVP, 2010, p. 11). Because these acts are socially sanctioned and directed toward a chosen group, these acts cannot be defined as random or nonexistent, furthering the need for interventions to reduce the stigma and negative attitudes that may lead to these hate crimes.

Mental Illness, Stigma, and Transgender Populations

Those who are diagnosed with or experience mental illness, along with those who identify as transgender, experience higher levels of stigma and marginalization. However, with greater awareness, it may be possible to improve attitudes toward mental illnesses. Much of the past research on mental illness stigma has focused on the contact hypothesis. Just as attitudes toward mental illness and marginalized groups have improved with increased contact and knowledge, we hope to demonstrate similar findings with transgender populations. Although past research on mental illness stigma and improved attitudes toward mental illness can help researchers better understand stigma toward transgender populations, this in no way suggests that identifying as transgender is a mental illness. However, despite this, gender dysphoria is still a mental illness disorder. This is necessary as some individuals who experience feelings of incongruence between their assigned gender and expressed gender have clinically impairing symptoms that warrant diagnosis and treatment, and many times,
due to insurance, clients must have a diagnosis in order to receive treatment and medical services (Drescher, 2013).

**Gender dysphoria.** Those who are diagnosed or struggle with a mental illness diagnosis are more likely to experience stigma than those who are not (Bockting, Miner, Romine, Hamilton, & Coleman, 2013). Additionally, transgender individuals appear to be at a higher risk of experiencing certain mental illnesses when compared to cisgender individuals and also experiencing mental illness stigma (Bockting et al., 2013). For example, transgender individuals are more likely to be diagnosed with clinical depression and other mood disorders (Bockting et al., 2013). Transgender individuals are also at an increased risk to experience generalized anxiety disorder and other anxiety disorders (Bockting et al., 2013). Individuals who identify as transgender also experience an increased risk for suicide (50%; NCTE, 2015c). However, having a separate mental illness diagnosis other than gender dysphoria is many times “not merely a manifestation of gender dysphoria” (Bockting et al., 2013, p. 6) Instead, many times, these additional mental illnesses are related to the enormous amount of discrimination, stigma, and stress these individuals face due to their identification with a minority population (Bockting et al., 2013).

The proportion of individuals that identify as transgender and may be diagnosed with gender dysphoria is estimated at 0.005 – 0.014% (natal males) and 0.0002 – 0.0003% (natal females; Memon, 2016). Gender dysphoria, according to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*, is defined as an individual’s incongruence and discomfort between their assigned
gender and their expressed gender that is ongoing for at least six months (APA, 2013). Much of the stigma that is experienced by transgender individuals stems from the past negative labeling of not identifying as one’s assigned sex (Drescher, 2013). However, since the change in disorder name from gender identity disorder in the previous version of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*) to gender dysphoria in the *DSM-5*, a gender disorder diagnosis no longer serves to pathologize one’s identity (APA, 2013; APA, 2000; Drescher, 2013).

Instead, a diagnosis of a gender disorder now aims to reduce the feelings of distress and incongruence that may be experienced if one does not identify as the gender they were assigned at birth (Drescher, 2013). Additionally, a change in disorder took place to help reduce the stigma that transgender individuals experience. However, even with a change in the name of the disorder, there is still much debate about whether a diagnosis of gender dysphoria warrants more stigma than it does access to care (Dresher, 2013). For an individual to be diagnosed with gender dysphoria, two subcriteria must be met, along with feelings of incongruence for at least six months (APA, 2013). The *DSM-5* subcriteria include, an incongruence in expressed gender and assigned gender and primary and/or secondary sex characteristics, a strong desire to be rid of one’s primary and/or secondary sex characteristics, or a strong desire for primary and/or secondary sex characteristics of the other gender (APA, 2013). Other subcriteria of the *DSM-5* include a strong desire to be the other gender, a strong desire to be treated as the other gender, a strong belief that they have feelings and reactions of the other gender, or a clinically significant
distress and/or impairment (APA, 2013). Additionally, it is important to understand that not all individuals who identify as transgender are diagnosed with gender dysphoria. Furthermore, by DSM-5 standards, identifying as transgender is not a mental illness (APA, 2013). Despite this, many transgender individuals are still stigmatized because they are viewed as having a mental illness due to identifying as transgender. Furthering the need for effective interventions to dispel stigma, negative attitudes, and misconceptions.

**Barriers to Equal Legislation for Transgender Populations**

Equal rights and legislation for transgender individuals have improved in recent years, but the gap that still exists in providing equal rights to transgender individuals continues to maintain stigma towards this group. The majority of laws that prohibit discrimination toward those who identify as transgender fall under laws that prohibit discrimination based on sex. Currently, there are only 17 states that explicitly protect individuals based on their gender identity rather than just “sex” (NCTE, 2015a). However, not all US states prohibit discrimination based on gender identity or expression (NCTE, 2015a). The rights that transgender individuals have fall into three categories: employment rights, medical rights, and rights guaranteed by educational institutions. However, due to stigma, the few rights that transgender persons do have access to such as equal access to medical care and services, may be withheld from them (NCTE, 2015a). For example, even though laws are in place that make it illegal for medical services to be refused based on gender identity medical providers may still do so, due to personal biases.
Currently, there are many in Washington D.C. who work to pass more policies and acts that will guarantee equal rights and protection for transgender individuals (NCTE, 2015a). Stigma and negative attitudes need to improve in order for legislation to be taken seriously and continue to develop for transgender populations. Although we cannot expect our nation’s people’s attitudes to change based on legislation improvements, we can expect with effective intervention techniques, which educate citizens on the lack of legislation, awareness will improve. With an educational intervention, we hope to educate participants on the lack of equal rights for gender minorities and to bring attention to the injustice faced by this population.

**Essentialism Theory: A Biological Explanation of Transgender to Reduce Stigma**

Not only do gaps in legislation maintain stigma toward transgender populations, but also many times the reason why someone identifies as transgender is also put under scrutiny. However, a biological explanation, or the Essentialism Theory, for identifying as transgender may reduce stigma and negative attitudes toward the identification of transgender. According to the Essentialist Naturalness (EN) Theory, an individual’s characteristics are innate, unchanging, and biological (Hodson & Skorska, 2015). For example, past research that has investigated this theory has studied whether or not the idea of a “gay gene” affects individuals’ attitudes toward LGB populations (Worthen, 2013). The support for a gay gene hypothesis dismisses the belief that identifying as LGB is a choice, and instead is biological, suggesting that identifying as LGB is something that “cannot be changed.”
(Worthen, 2013). When identifying as LGB is viewed by individuals as an aspect of someone that cannot be changed, attitudes tend to be less stigmatizing (Worthen, 2013). Some researchers have suggested that the biological explanation (i.e., support for a gay gene) may lead to fewer negative attitudes toward gay men and women, despite limited support for this gene (Worthen, 2013). Furthermore, research has indicated a decrease in negative attitudes when there has been a presentation of factual information or a presentation of a biological view of sexual orientation (Liddle & Stowe, 2002; Oldham & Kasser, 1999; Piskur & Degelman, 1992). Additionally, those who support a theory of essentialism have more tolerant views and attitudes toward transgender populations, and those who have more tolerant attitudes of LGB populations tend to have more tolerant views of transgender populations, suggesting that those who support the Theory of Essentialism may also have more positive attitudes toward transgender populations (Worthen, 2012).

Recent research has also investigated whether a biological explanation for mental illness can reduce stigma and negative attitudes that those diagnosed with mental illness experience (Kvaale, Gottdiener, & Haslam, 2013; Kvaale, Haslam, & Gottdiener, 2013). Results from these studies suggested that explaining mental illness with a biogenetic explanation does appear to reduce blame, but increases a person’s perceived dangerousness if diagnosed with a mental illness (Kvaale, Gottdiener, & Haslam, 2013; Kvaale, Haslam, & Gottdiener, 2013). However, these results were marginal (Kvaale, Gottdiener, & Haslam, 2013; Kvaale, Haslam, & Gottdiener, 2013). Furthermore, a study by Kvaale, Gottdiener, and Haslam (2013) reported
correlational statistics, implying that the study cannot show cause and effect. Using correlational statistics does not mean that this study does not have merit, but it may reduce its ability to apply to studies that are not identical to itself. Additionally, although perceived dangerousness, and perhaps stigma, may increase when using a biological explanation to reduce mental illness stigma, this study aims to investigate the use of a biological explanation in reducing transgender stigma and negative attitudes, which is not a mental illness. We plan to test this theory, with a similar population as Worthen (2012), to better understand if negative attitudes and stigma are lower among those who believe in a biological explanation of transgender. To implement this theory, and to better understand the stigma discussed previously, past and present interventions and gaps in those interventions would need to be examined.

Interventions to Improve Negative Attitudes Toward Gay Men and Lesbians

Interventions that have focused on reducing negative beliefs and homophobia toward sexual minority populations have found mixed results, suggesting that despite the amount of research in this area results are inconclusive (Guth, Lopez, Clements, & Rojas, 2001). Additionally, the few intervention studies that have focused on reducing negative attitudes toward transgender populations have also found mixed and inconclusive results (Case & Stewart, 2013; Liddle & Stowe, 2002). Even with a limited amount of research on interventions for transgender discrimination, researchers suggested that education may help dispel transphobic attitudes and feelings of prejudice (Case, Stewart, & Tittsworth, 2009).
Mixed results from prior transgender research also suggested a further need for research on attitude change in this area (Iverson & Seher, 2014). Very few studies, especially in the United States, have investigated interventions for improving attitudes toward transgender populations (Worthen, 2013; Worthen 2012). Studies have measured the existing attitudes toward transgender populations but have not emphasized ways to reduce these attitudes. Even fewer studies have investigated the use of educational modules in reducing these negative attitudes. Conducting this research is imperative to further understand how attitudes towards this marginalized population can be modified.

To better understand anti-transgender behaviors, negative attitudes and perceptions towards this population must be understood. Intervention research on negative attitudes toward gay men and lesbians may shed light on the approaches that can be employed by anti-stigma intervention studies toward transgender populations. This research is valuable in building a better understanding of attitudes toward both gay men and lesbian populations and transgender populations. Steps that have been taken toward investigating attitudes toward transgender individuals include the creation of measures to better understand existing attitudes towards this population. As discussed above, there is a wealth of existing research on LGB (Lesbian, Gay, and Bisexual) populations, but less research emphasis on transgender populations. However, the stigma and discrimination faced by individuals that identify as transgender is widely prevalent (Walch, Ngamake, Francisco, Stitt, & Shingler, 2012). To better understand this stigma, there is a need for specific measures to
capture the depth of stigma that transgender populations experience (Walch et al., 2012). Walch et al. (2012) created a measure to examine the attitudes towards transgender populations. Measures such as the above attitude scale will enable us to understand the depth of the stigma that transgender populations experience and shed light on specific areas and contexts in which they may face greater stigma.

Additionally, prior research that has focused on improving attitudes toward sexual orientation minority populations has revealed that educational interventions and increased knowledge have been shown to reduce stigma and increase positive attitudes towards sexual minority populations (Iverson & Seher, 2014; Liddle & Stowe, 2002; Oldham & Kasser, 1999; Piskur & Degelman, 1992; Stevenson, 1988). Oldham and Kasser (1999) demonstrated that the presentation of a ‘biological basis for homosexuality’ argument could lead to attitude change. This change was demonstrated with a post-test immediately after the presentation of information and a week later with the same post-test (Oldham & Kasser, 1999). As previous studies have found increased positive attitudes toward sexual minorities with educational interventions, workshops, or increased knowledge, we hope to find similar results with our educational module. By increasing knowledge about transgender among populations that do not identify as transgender, we hope to create awareness about a highly stigmatized group.

Interventions to Reduce Negative Attitudes Toward Transgender Population

Although there is limited research focused on reducing negative attitudes toward transgender populations, some studies have investigated measures to increase
positive attitudes toward this group. For instance, King et al. (2009) expressed that prior contact with transgender populations can reduce negative attitudes or transprejudice. This suggests that negative attitudes towards this population can be improved with exposure. Furthermore, Case and Stewart (2013) implemented three different intervention strategies to better understand how negative attitudes toward transgender individuals can be reduced. An emotional intervention (i.e., a letter from a transgender person to their parents), a fact-based intervention (i.e., a page of statements addressing transgender myths), and a media intervention (i.e., a transgender documentary) were used as intervention techniques in their study (Case & Stewart, 2013). The authors explained that all interventions were equally effective in reducing negative attitudes; that is, all interventions appeared to significantly reduce participants’ negative attitudes toward transgender populations. Case and Stewart (2013) also posited that participants’ exposure to knowledge and factual information might have also played a role in reducing negative attitudes, strengthening the need and support for an educational intervention. Although negative attitudes were reduced in the study, participants’ behaviors may not have changed, and anti-transgender behaviors may still be endorsed, this is suggested because longitudinal follow-up measures were not conducted and negative behaviors were not predicted to decrease. (Case & Stewart, 2013).

To date, there have been very few studies where multiple factors of transgender (e.g., transgender definition, prevalence, effects of stigma, etiology, how to be an ally) are explored to help improve attitudes and knowledge. Although current
textbooks are now starting to include more information on lesbian, gay, and bisexual populations, there is very little information on attitudes towards transgender populations within educational contexts (Case et al., 2009). The lack of information on transgender populations within educational settings emphasizes the gap in knowledge about this population (Case et al., 2009), and further underscores the need for research in this area. Additionally, a lack of awareness about transgender issues may perpetuate a growth in anti-transgender attitudes.

Some of the few studies that have focused on improving attitudes toward sexual minority populations have included transgender populations (Costa & Davies, 2012; Horn & Romeo, 2010; Liddle & Stowe, 2002; Oldham & Kasser, 1999; Piskur & Degelman, 1992). For example, Costa and Davies (2012) investigated adolescents’ attitudes toward both transgender populations and sexual orientation minorities. They found that many adolescents who endorsed negative attitudes toward transgender populations also endorsed negative attitudes toward gay men and lesbians (Costa & Davies, 2012). Additionally, Horn and Romeo (2010) discussed that to improve peer interactions between LGBT and other students, contact needs to be present for a sustained period. Although past literature shows that increased contact helps eliminate negative attitudes and decrease stigma, it is not known whether factors that are effective in reducing negative attitudes toward sexual minorities (i.e., gay and lesbian populations) will be successful for gender minorities (i.e., transgender populations).
Educational Interventions with Other Populations

Past research with educational interventions for other populations displays an enormous amount of research and literature. However, these educational interventions have been lacking for the LGBT community, and especially for the transgender community. Educational interventions are useful in providing factual information and educating laypersons about information that otherwise may not be readily available. Additionally, educational interventions or modules can be used to dispel inaccurate myths or beliefs about certain populations such as transgender individuals (White Hughto, Reisner, & Pachankis, 2015). Current educational modules appear to be focused on professionals such as doctors or those in careers that may have a higher propensity to work with transgender individuals (e.g., National LGBT Health Education Center Webinars, University of California, San Francisco LGBT Resource Center, Association of American Medical Colleges Implementing Curricular and Institutional Climate Changes to Improve Health Care for Individuals Who are LGBT, Gender Nonconforming, or Born with DSD). Currently, there are available websites (e.g., The National Center for Transgender Equality, Gay, and Lesbian Alliance Against Defamation, Human Rights Campaign) that provide information for both transgender populations and laypersons who want to learn more. However, these resources may not have all the information in one place, and it also may be difficult for users not familiar with the resource to find. An educational module will provide relevant information to further understand transgender populations, including stigma and discrimination these individuals may face, in one, easy to navigate space.
Educational modules that are available online, such as this one, can be found with a simple internet search. Educational interventions have helped improve attitudes toward a wide variety of populations. For instance, educational interventions have helped foster positive views of people with intellectual disabilities (Campbell, Gilmore, & Cuskelly, 2003; MacDonald & McIntyre, 1999; Seewooruttum & Scior, 2014). A review by Seewooruttum and Scior (2014) with 22 studies investigated the results of knowledge and contact, both direct and indirect, on attitudes toward intellectual disabilities. The authors suggested that contact, whether direct or indirect, had positive effects on negative attitudes. Additionally, interventions that included educational aspects were found to have benefits in increasing staff and faculty’s positive perceptions of intellectual disabilities (i.e., Down syndrome). Although positive effects were found, these changes may not be universal (Seewooruttum & Scior, 2014). Campbell et al. (2003) also investigated participants’ attitudes and knowledge of intellectual disabilities to examine whether awareness, knowledge, and positive attitudes toward intellectual disabilities could be increased. Participants had both direct contact through field experience and the presentation of knowledge with classroom instruction (Campbell et al., 2003). Results from pre- and post-test measures demonstrated an increase in both knowledge of accurate information about the chromosomal disorder of Down syndrome and an increase in positive attitudes toward this population (Campbell et al., 2003).

Educational interventions using different mediums have also been used to improve attitudes toward mental illness (i.e., Schizophrenia; Brown, 2010; Brown et
al., 2010). One intervention used both a film and a hallucination simulation (Brown et al., 2010), whereas the other only included a hallucination simulation (Brown, 2010). The film intervention implemented in Brown et al. (2010) utilized a film that described the experiences of persons diagnosed with schizophrenia. The hallucination simulation experienced by participants in both studies was designed to resemble an auditory hallucination that an individual diagnosed with schizophrenia may experience (Brown, 2010; Brown et al., 2010). Participants in the hallucination simulation intervention group heard voice and non-voice sounds that were positive, negative, and paranoid (Brown, 2010; Brown et al., 2010). Brown (2010) and Brown et al. (2010) concluded that the film intervention decreased stigma toward mental illness across one week. However, further research is necessary for hallucination simulation to be used as an intervention for mental illness stigma and appears to be somewhat unreliable (Brown, 2010).

Educational interventions have also been used to promote more positive attitudes toward lesbians and gay men (Guth et al., 2001, Hodson, Choma, & Costello, 2009; Iverson & Seher, 2014). Iverson and Seher (2014) discussed the use of theater to improve the attitudes toward lesbian, gay, and bisexual populations. The researchers found that after students had been exposed to a play, True Lives, there was a significant change in attitudes toward gay men and lesbians (Iverson & Seher, 2014). Participants attitudes were measured pre-and post-theatre performance, which showed an increase in positive attitudes toward gay men and lesbians (Iverson & Seher, 2014). Guth et al. (2001) also investigated the use of educational interventions
with gay men and lesbian populations. They discussed the use of short-term in-person training interventions vs. internet training to decrease negative attitudes toward lesbian and gay populations. Results revealed that when compared to the control group, which did not receive any information on homosexuality, both the in-person training intervention and the internet training groups had less negative attitudes toward gay men and lesbians. Although these results were not statistically significant, they pointed in the right direction (Guth et al., 2001). Additionally, Guth et al. (2001) administered a follow-up questionnaire three weeks after the post-test, which demonstrated participants still had reduced negative feelings toward gay men and lesbians, further establishing the use of educational interventions to reduce negative attitudes. The large overlap of predictors for negative attitudes toward both gay men and lesbians and transgender populations support the use of similar interventions for these populations.

**Current Study**

In the current study, an educational module was proposed to reduce stigma and negative attitudes toward transgender populations. The experimental group was provided with an educational module, while the control group was provided with a neutral video. Both groups’ attitudes and knowledge of transgender populations was measured pre-and post-intervention. The educational module informed participants about definitions of terms such as transgender and gender dysphoria, as well as provided knowledge about legislation and equal rights for transgender individuals. Furthermore, we expected that exposure to the module would improve knowledge
about etiological theories of gender dysphoria, the prevalence of transgender and gender dysphoria, stigma and its effects, and how to be an ally to those who identify as transgender.

To improve attitudes toward those who are regarded as the outgroup, or improve perceptions of how others are perceived, there is a need to increase knowledge of laypersons towards these populations. The proposed educational module will help facilitate the creation of future educational tools for introducing and educating laypersons on transgender populations. This study raises awareness about the oppression that transgender individuals face, emphasizes the need for improved attitudes toward transgender populations, and investigates the effectiveness of an educational intervention in improving negative attitudes toward transgender populations.

**Purpose of Study**

There is a gap in the literature on attitudes towards transgender populations and anti-stigma interventions focused on individuals who identify as transgender. Specifically, there is very little research that assesses not just the stigma but the specific aspects of stigma, such as negative affect, the perception of danger, and social distance. Furthermore, there is almost no research on the use of educational modules to increase knowledge about issues faced by transgender populations and reduce stigma towards them. This study is an essential first step that informs the creation of specific and targeted interventions that promote awareness and reduction of negative attitudes towards transgender populations. This study also measured
attitudes and perceptions of transgender populations held by Introductory to Psychology Students. We addressed these gaps in the literature with the following hypotheses.

**Hypotheses**

**Hypothesis 1:** It was hypothesized that attitudes and stigma toward transgender populations would improve after being exposed to an educational module. Specifically, the experimental group would have less negative attitudes and stigma (i.e., lower social distance, lower negative affect, lower perception of danger, lower negative attitudes, lower perceived discrimination, and lower fear of transgender populations) than the control group during the post-test. The control group would show no change from the pre-test to post-test.

**Hypothesis 2:** It was hypothesized that knowledge about transgender populations would improve with an educational module. Specifically, the experimental group would have greater increase in knowledge from the pre-test to post-test as compared to the control group. The control group would not report any change.

**Hypothesis 3:** It was expected, at post-test, that a higher degree of contact and familiarity with individuals who identify as transgender would be associated with less stigma and fewer negative attitudes.

a. We hypothesized that greater contact with individuals who identify as transgender would be associated with less stigma and fewer negative attitudes.
b. We hypothesized that familiarity with individuals who identify as transgender would be associated with less stigma and fewer negative attitudes.

Hypothesis 4: It was expected, at post-test, that having knowledge about transgender populations would predict less stigma and fewer negative attitudes.

Hypothesis 5: It was expected that a specific individual difference factor would moderate the relationship of contact and familiarity with stigma.

a. A belief in the theory of essentialism would moderate the relationship between contact and stigma/negative attitudes toward transgender populations. Specifically, those who had higher contact with transgender populations and a belief in a biological theory would have less stigma and negative attitudes. However, even with less contact, those with beliefs in the biological explanation of transgender would have less stigma and negative attitudes.

b. A belief in the theory of essentialism would moderate the relationship between familiarity and stigma/negative attitudes toward transgender populations. Specifically, those who have higher familiarity with transgender populations and a belief in a biological theory would have less stigma and negative attitudes. However, even with less familiarity, those with beliefs in the biological explanation of transgender would have less stigma and negative attitudes.
CHAPTER 3

METHODOLOGY AND DESIGN

Method

The current study implemented a quantitative research design. For this study, the ANOVA-based analyses employed a 2 x 2 mixed ANOVA with one within-person repeated measures factor (i.e., pre- and post-knowledge) and one between factor (i.e., experimental group vs. control group). The time of measurement (pre- vs. post-knowledge) was the within subjects factor, while the group (experimental group vs. control group), was the between factor. Independent variables within the ANOVA analyses included the groups (experimental group vs. control group) and the dependent measure included knowledge and stigma and negative attitude measures that were measured at pre-and post-test (i.e., knowledge, social distance, negative affect, and attitudes toward transgender populations). The study also implemented regression-based analyses. For regression-based analyses the predictor variables included contact and familiarity measures as well as the knowledge measure. For the regression-based analyses outcome measures included all stigma and negative attitude measures (i.e., social distance, negative affect, attitudes toward transgender populations, and devaluation-discrimination. Lastly, for moderated regression-based analyses the predictor variables included contact and familiarity measures, and the outcome variables included all stigma and negative attitudes measures (i.e., social distance, negative affect, attitudes toward transgender populations, and devaluation-discrimination). The moderating variable was the essentialism variable. Furthermore,
for the moderated regression-based analyses, predictor and moderator variables were centered to the mean, and an interaction term was created between the predictor and moderator variable.

Participants

Participants were Introduction to Psychology students, recruited at a medium-sized Midwestern University. Participants were recruited through the Psychology department participant pool using the SONA software (Fidler, De Veyra, Peedu, & Sangalang, 2002). SONA allows students to sign up to participate in research while receiving course credit. Participants were compensated with one credit for their participation, which is the amount granted to students who participate in a study of this length. Participants who identified biological sex as intersex or “not listed” were removed from the data. Additionally, participants whose gender identity was listed as transgender, nonbinary, fluid queer, gender queer, or not listed were also removed from the data, as this study is looking to improve the attitudes of cisgender participants.

The sample consisted of 221 undergraduate students (ages 18-24) from the University of Northern Iowa. The participants were largely female (65.2%), 18 years-old (56.9%), and Caucasian (83.6%). Two participants who identified as transgender, or any gender identity other than male or female, were removed from the study. No other participant descriptive information was employed as exclusion criteria.
Procedure

Participants answered an online questionnaire inquiring about demographic information, such as age, gender, race, knowledge about transgender populations, contact with transgender populations, attitudes toward transgender populations, and transphobic attitudes. Participants then read a short definition of the term transgender. See Appendix B to view the definition. Participants were randomly assigned via Qualtrics software to either the experimental or control group. Participants assigned to the experimental group viewed the educational module and were asked to spend 20–25 minutes reading the information provided in the study website. Participants assigned to the control group watched an excerpt from a neutral video (See Appendix P for a screenshot of the neutral video) documentary about Ireland, instead of receiving the educational module. Before the researcher selected the neutral video, the video was screened for any emotionally evocative material or material that may appear transgender in nature; thus, this video excerpt does not contain any of emotionally evocative or ambiguous gender identity material. Permission to use this video was acquired from the British Broadcasting Company (Partridge & Gunton, 2003). To discourage random responding, attention checks and manipulation checks were provided throughout the questionnaires for both the control group and the experimental group.

Intervention

The educational module website has been created via Google Sites (2008). The module was initially created in an outline format. The sections within the module
were adapted based on existing literature on transgender populations. The researchers
gathered information from multiple empirical resources, including academic journals
and national LGBT support resources. Permission was also acquired from different
authors to use images and other module information. Google Forms (2007) was then
used to add “pop quizzes” to the module to ensure that participants read all of the
information and visited all of the module pages.

To control for order effects, the presentation of scales was randomized for
each participant. Both experimental and control group participants received the same
scales. Before viewing the educational module, both groups received the informed
consent, a brief demographic questionnaire, and a description of transgender. Both
groups also received the pre-test knowledge questions, a modified version Substance
Use Contact Scale or the Transgender Contact Scale (Brown, 2011), the Level of
Familiarity Scale (Corrigan et al., 2003), the Social Distance Scale (Link, Cullen,
Frank, & Wozniak, 1987), the Affective Reaction Scale (Penn et al., 1994), the
Attitudes Toward Transgender Individuals (ATTI; Walch et al., 2012), and the
Devaluation-Discrimination Scale (Link et al., 1989). Participants then received either
the educational module or the neutral video. Following the educational module or
neutral video, all participants received the Social Distance Scale (Link et al., 1987),
the Affective Reaction Scale (Penn et al, 1994), the Attitudes Toward Transgender
Individuals (ATTI; Walch et al., 2012), and the Devaluation-Discrimination Scale
(Link et al., 1989) a second time. Participants also received the Essentialism Index
(Bastian & Haslam, 2006) and the post-test knowledge questions for the first time
during the post section of the study. Participants did not receive the Transgender Contact Scale (Brown, 2011) and the Level of Familiarity Scale (Corrigan et al., 2003) for a second time because we do not expect these to change throughout the study.

**Attention Checks**

To ensure quality data, Peer, Vosgerau, and Acquisti (2014) recommended the use of attention checks. Attention checks are questions that ensure that the participants are paying attention to the survey questions. We used three attention checks listed in Appendix M. The first attention check has been adapted from Oppenheimer, Meyvis, and Davidenko (2009). Participants are asked in the first attention check to read a paragraph. At the end of the first attention check question, participants are told to click on *next* from the list of responses. Hence, it is essential to read the attention check completely to get the correct response. The second attention check adapted from Paolacci, Chandler, and Ipeirotis, (2010) asked participants if they have ever had a fatal heart attack while watching TV. Participants are given five response options, but the correct answer is *never*. In the third attention check adapted from Downs, Holbrook, Sheng, and Cranor (2010), participants are asked to provide the correct answer for that question and then to type the word “psychology” into a given box. The use of attention checks helped to ensure the reliability of data. Data from attention checks were kept if participants missed one question or less from each attention check.
Manipulation Checks

Additionally, to ensure that the independent variables had their intended effect, manipulation checks were used. By identifying if the independent variables had the intended effect, researchers would know if the study had sufficient power and if the manipulation worked as expected (Oppenheimer et al., 2009). Manipulation check questions were created by researchers to better understand if participants retained information from the experimental condition and understood what the study was about. In this study, manipulation check questions were also created to better understand if participants retained information about the biological explanation. Because the biological explanation is one of the main hypotheses and the moderation variable, the researchers wanted to identify how well the manipulation for this worked. See Appendix N for the manipulation checks.

Power Analysis

To ensure that an adequate sample size was achieved, G* Power (Faul, Erdfelder, Lang, & Buchner, 2007) was used to estimate a priori sample size estimates. G* Power was first used to estimate the sample size of moderated regression. Linear multiple regression: fixed model, $R^2$ increase was used with an effect size (ES) of 0.15, $\alpha = .05$, and power (1 - $\beta$) of .95 (Faul et al., 2007). This indicated that a sample size of 86 would be needed to detect a medium ES (Faul et al., 2007). G* Power was also used to estimate the sample size of a 2 x 2 mixed analysis of variance (ANOVA) with one within-person repeated measures factor (i.e., pre- and post-stigma) and one between person factor (i.e., experimental group vs. control
group). Furthermore, G*Power was used for Analysis of Variance (ANOVA): repeated measures within-between interaction with an ES of 0.15, α = .05, and (1 - β) of 0.95. This indicated that a sample size of 148 would be needed to detect a medium ES (Faul et al., 2007). However, this study aimed for a target sample of 175. See Appendix Q for G* Power a priori analyses. The largest estimated sample size based on the power analyses was 148.

Measures

Demographics. Researchers inquired about participants’ demographic information. Participants were asked to report information such as age, gender, and race/ethnicity. Demographic questions were also used to better understand information provided by participants. See Appendix A for all demographic questions.

Transgender Contact Scale. A modified version of the Substance Use Contact Scale or the Transgender Contact Scale (SUCS; Brown, 2011) is a 4-point Likert scale (1 = never, 4 = often) with seven items. This scale was used originally created to measure how often an individual interacted with someone who is mentally ill (Brown, 2011). However, for purposes of this study the items were modified to measure how often an individual came into contact with someone who identifies as transgender. Sample items for this study include, “During the last year, please indicate how often you interacted with individual(s) who are transgender where you live? Where you live refers to those interactions where you live (e.g., roommates, family members),” and “During the last year, please indicate how often you interacted with individual(s) who are transgender at work? At work refers to those interactions at work (e.g., coworkers,
supervisor, customers).” A higher score on the SUCS indicates a higher degree of contact with the target population and a lower score indicates a lower degree of contact with the target population. Strong, Guajardo, and Arsiwalla (2015) reported acceptable reliability with this measure at $\alpha = .78$ for contact with substance users. This reliability is relevant as this study also used modified items with the SUCS (Strong et al., 2015). See Appendix C for all items. The current study also found acceptable reliability for the measure ($\alpha = .79$).

**Level of Familiarity.** The Level of Familiarity scale (LOF; Corrigan et al., 2003) was used to determine an individual’s level of familiarity with mental illness (Corrigan et al., 2003). The LOF scale is used to evaluate an individual’s tendency or likelihood to endorse stereotypes (Corrigan et al., 2003). Research suggested that those who are more familiar or acquainted with the target population will be less likely to endorse stereotypes and more likely to have more positive attitudes (Corrigan et al., 2003). For this study, items on the LOF were modified to inquire about participant’s contact with those who identify as transgender. For example, items were modified to “I have never observed a person that I was aware that was transgender,” and “I am transgender.” The LOF scale was originally scored in a ranking manner. The 11 statements on the LOF scale were each coded with a rank score of 1–11, (11 = most intimate, 7 = medium intimacy, and 1 = little intimacy) and if a participant checks more than one statement their highest level of intimacy was used as the score. The scale was also used to create a familiarity score (Corrigan et al., 2003), which is an alternate way the scale can be scored. Participants responded to
11 yes/no (yes = 1; no = 0) items; responses were then added together to create the familiarity score (Corrigan et al., 2003). The familiarity score can range from 1 – 11 when added together, as each question that is answered “yes” gets one point. For example, a participant can receive a score of 1 = “I have never observed, in passing, a person I believe may have had a severe mental illness,” all the way to 11 = “I have a mental illness” (Corrigan et al., 2003). Corrigan et al. (2003) reported reliability at .62. An acceptable reliability of .73 was also found in additional studies (Strong et al., 2015). See Appendix D for all items. The current study found reliability of $\alpha = .44$ for the averaged version of this measure.

**Social Distance Scale.** The Social Distance Scale (SDS; Link et al., 1987) is a 4-point Likert scale (0 = *definitely unwilling*, 3 = *definitely willing*) with seven items. This scale was originally created to measure an individual’s overall interaction with persons who are mentally ill and included a vignette (Link et al., 1987) and is an assessment of stigma. The scale was modified to measure the participants’ perceived willingness to interact with someone who identifies as transgender without the vignette. Original sample items include, “How would you feel about renting a room in your home to someone like Jim Johnson?,” and “How about as a worker on the same job as someone like Jim Johnson?” (Link et al., 1987). Scale items were modified by replacing the name “Jim Johnson” with “transgender individual,” “transgender,” or “a person who identifies as transgender.” Modified scale items include, “How would you feel about renting a room in your home to someone who identifies as transgender?” and “How about as a worker on the same job as a
transgender individual?” Higher scores on the measure indicate an unwillingness to interact with someone who identifies as transgender. The scale demonstrated acceptable reliability ($\alpha = .75$) in previous research (Penn et al., 1994). Brown (2011) also reported reliability as ($\alpha = .85$) and good construct validity. See Appendix E for all modified scale items. The current study found excellent reliability for this measure at both pre- ($\alpha = .93$) and post-test ($\alpha = .94$).

Affective Reaction Scale. The Affective Reaction scale (Penn et al., 1994) required participants to indicate feelings toward the target population that was being investigated. The Affective Reaction scale is 7-point-bipolar scale containing 10 items (Penn et al., 1994). Participants were asked to rate their emotional reactions more closely to one adjective or another (e.g., fearful or confident). The Affective Reaction scale was originally created to measure participations emotional reactions when thinking about having to interact with an individual who was diagnosed with a mental illness (Penn et al., 1994). The original scale item was, “If you were to interact with Jim Johnson, indicate how you would feel.” The modified scale was, “If you were to interact with someone who identifies as transgender, indicate how you would feel” (Penn et al., 1994). No adjective items were modified with this scale; however, the directions read by participants were modified from, “If you were to interact with Jim Johnson, indicate how you would feel” (Penn et al., 1994) to, “If you were to interact with someone who identifies as transgender, indicate how you would feel.” The Affective Reaction scale, similar to the SDS, measures affective attitudes participants may have toward the target populations (Penn et al., 1994). Additionally,
the Affective Reaction scale more closely examines emotional response attitudes that can be beneficial in measuring degrees of stigma toward the target population (Penn et al., 1994). The internal consistency of the scale was .86 (Penn et al., 1994). Brown (2011) also reported acceptable reliability ($\alpha=.92$) of a modified version of the Affective Reaction scale. See Appendix F for all scale items.

The modified versions of the stigma measures (i.e., Social Distance Scale, Affective Reaction Scale; Link et al., 1987; Penn et al., 1994) were justified for their use with transgender populations. We believe that the original scale items, which inquired about marginalized populations, would also reliably inquire about the stigma associated with transgender populations, since this was also a highly marginalized population. The current study had excellent reliabilities for this measure at both pre-test ($\alpha=.95$) and post-test ($\alpha=.96$). It is important to note throughout the results and discussion section the Affective Reaction scale will be referred to as “positive affect” due to coding direction.

**Attitudes Toward Transgendered Individuals.** The Attitudes Toward Transgendered Individuals scale (ATTI; Walch et al., 2012) inquired about participants’ attitudes toward transgender populations. The ATTI is a 20 item, 5-point Likert scale ranging from *strongly agree* (1) to *strongly disagree* (5; Walch et al., 2012). Scale items include, “It would be beneficial to society to recognize transgenderism as normal,” and “Transgenderism is a sin” (Walch et al., 2012). A higher score on the ATTI indicated more tolerant attitudes toward transgender individuals (Walch et al., 2012). The ATTI differentiates from other measures of attitudes toward transgender
individuals by evaluating individuals’ “cognitive evaluations and affective reactions to transgendered individuals and transgenderism and excludes items assessing overt behavioral expressions of stigma and discrimination” (Walch et al., p. 1284, 2012). Stigma in the form of behaviors are important to understand, but evaluating individuals’ reasoning for negative attitudes and beliefs will benefit this study. The ATTI was found to correlate with other measures of transgender attitudes such as the Genderism and Transphobia Scale ($r = -.85$ and $r = -.90$; Hill & Willoughby, 2005; Walch et al., 2012). Discriminant validity was also found to be sufficient when compared to measures that did not evaluate attitudes toward transgender individuals (Walch et al., 2012). However, the score did represent some social desirability ($r = .19$, $df = 235$, $p = .001$; Walch et al., 2012). Cronbach’s alpha in post studies has been reported as .98 (Davidson, 2014). See Appendix H for all items. The current study found excellent reliabilities for this measure at both pre- ($\alpha = .93$) and post-test ($\alpha = .94$).

Devaluation-Discrimination Scale. The Devaluation-Discrimination (DD) scale (Link et al., 1989) was created to measure perceived discrimination toward individuals with mental illness (Link et al., 1989). The DD scale is a 12 item, 5-point Likert scale that ranges from a great deal (1) to none at all (5; Link et al., 1989). This scale was modified to measure an individual’s perceived discrimination toward transgender individuals. The original DD scale measured attitudes of perceived discrimination (Link et al., 1989). Items included, “Most people would willingly accept a mental patient as a close friend, and “Most people would believe that a
person who has been in a mental hospital is just as intelligent as the average person” (Link et al., 1989). Internal consistency was reported as .76 (Link et al., 1989). However, these items were altered to better understand an individual’s perceived discrimination toward our target population, further identifying stigma experienced by transgender individuals. For example, modified items included “I would willingly accept a transgender individual as a close friend,” and “I would believe that a person who identifies as transgender is just as intelligent as the average person.” Scale items were also modified from “most people” to “I”; we wanted to understand how the individuals taking the survey responded to transgender populations. Past research that has altered the items from “most people” to “I” have found similar reliability with a coefficient alpha (.87; Hackler, 2011). Additional studies have found reliability between .72–.88 (Alvidrez, Snowden, Rao, & Boccellari, 2009; Vauth, Kleim, Wirtz, & Corrigan, 2007). Additionally, Link et al. (1989) have found the DD scale to be correlated with other measures of stigma. See Appendix I for all modified items. The current study found acceptable reliability for this scale ($\alpha = 84$).

**Essentialism Index.** The Essentialism Index (Bastian & Haslam, 2006) is a 6-point Likert scale (1 = strongly agree; 6 = strongly disagree) with 23 items. The Essentialism Index inquired about participants’ belief in the theory of essentialism or the belief that a person’s characteristics are innate and unchanging (Bastian & Haslam, 2006). The Essentialism Index taps into endorsed stereotypes based on the idea that traits are biologically based and unchanging. By measuring this construct, researchers could explore why individuals stigmatized the target population. The
scale contained three constructs of essentialism: biological basis, discreteness, and informativeness (Bastian & Haslam, 2006). For the current study, only the eight-item construct of biological basis was used. Items included, “The kind of person someone is can largely be attributed to genetic inheritance,” and “Very few traits that people exhibit can be traced back to their biology” (Bastian & Haslam, 2006). In past studies, the Cronbach’s alpha was excellent (α = .89; Davidson, 2014). See Appendix K for all items. The current study found acceptable reliability for this scale (α = .79).

**Knowledge questions.** Participants knowledge of transgender populations was assessed before and after viewing the educational module, to identify if knowledge improved. Knowledge questions inquired about participants’ awareness and education of topics related to transgender including definitions, gender dysphoria, legislation and equal rights, etiology, prevalence, effects of stigma, and considerations on how to be an ally. The knowledge questions consisted of 19 multiple choice questions. See Appendix L for all items. The knowledge questions were created from information that was presented in the educational module. The pop quizzes that participants answered throughout the educational module also used the same questions as the knowledge questions. This was done to help keep participants on task and with the retention of information. The current study found reliabilities somewhat below acceptable for the knowledge questions at both pre- (α = .53) and post-test (α = .60).

**Manipulation**

**Educational module.** The educational module provided participants with information on transgender populations. This information included what transgender
is, and what it is not, what gender dysphoria is and what it is not, legislation and equal rights for transgender populations, the prevalence of transgender, effects of stigma toward transgender populations, and recommendations on how to be an ally to transgender populations. The educational module was created via Google Sites (2008). Empirical research and national organizations were used to gather information and resources that are directed toward and available for transgender populations. We expect this media to be an effective way to improve negative attitude because this educational module contains new information that is empirical, presented in an attractive manner, and organized, as this is the criteria that research has suggested improves and changes attitudes (Olson & Zanna, 1993). This information was then presented in the created module. See Appendix O for images of the educational module.

Data

Data collected was cleaned and checked for outliers. The data was also checked for outliers > 4 standard deviations away from the mean. Any variables with outliers i.e., z-scores over four standard deviations were deleted. A sensitivity analysis was performed to detect whether the dataset with complete cases is different from the dataset with the missing cases deleted. The Little’s Missing Completely at Random (MCAR) test was assessed to test whether the data are missing at random or completely at random (Jamshidian, Jalal, & Jansen, 2014). More than 10% of the cases were not missing, so moderated regressions were not performed with AMOS (Arbuckle, 2014). Participants who identified their biological sex as intersex or “not
listed” were removed from the data. Additionally, participants whose gender identity was listed as transgender, nonbinary, fluid queer, gender queer, or not listed were also removed from the data, as this study focused on improving the attitudes of cisgender participants. The average for variables were computed. IBM’s statistical package SPSS was also used to run statistical analyses (IBM, 2016).

Plan of Analysis

Analysis of Variance

For Hypothesis 1, it was expected that attitudes and stigma toward transgender populations would be improved with an educational module. A 2 x 2 mixed analysis of variance (ANOVA) with one within-person repeated measures factor (i.e., pre- and post-stigma) and one between person factor (i.e., experimental group vs. control group) was used. We expected a significant interaction, such that stigma would be the same for the experimental and control group and higher at pre-assessment. However, at post-assessment, the experimental group would decline slightly, whereas the control group would show no change from pre- to post-measure.

For Hypothesis 2, a 2 x 2 mixed ANOVA with one within-person repeated measures factor (i.e., pre- and post-knowledge) and one between factor (i.e., experimental group vs. control group) was also used. We expected a significant interaction, such that knowledge would be the same for the experimental and control group and lower at pre-assessment. However, at post-assessment, the experimental group would improve, whereas the control group would show no change from pre- to post-measure. Knowledge was calculated by converting the knowledge questions to a
categorical variable (1 = correct response, 0 = incorrect response). A total score was used to assess pre- and post-differences in knowledge in the experimental group as compared to the control group.

**Regression Analyses**

For Hypothesis 3, multiple regression was used to measure contact as a predictor of stigma toward persons who identify as transgender, while controlling for sex and income. We expected the experimental group, or those with a higher degree of contact or familiarity with transgender populations, to have a decline or slightly fewer negative attitudes, toward transgender persons.

For Hypothesis 4, regression analysis was used to measure if contact or familiarity with transgender populations predicts higher knowledge about transgender populations. We expected those who have higher contact or familiarity with transgender populations, or the experimental group, to have more knowledge about transgender populations and less stigma and negative attitudes.

**Moderated Regression Analysis**

For Hypothesis 5, moderation analysis was used to identify if the moderator i.e., a belief in a theory of essentialism will influence the relationship between contact/ familiarity with transgender populations and stigma or negative attitudes. Moderated regression analyses were used to examine whether the theory of essentialism moderates the relationship between contact and stigma. Using the procedure by Aiken and West (1991), the predictor (contact/ familiarity) and the moderator (Theory of Essentialism) were centered to the mean. A multiplicative
interaction term was created by multiplying the predictor with the moderator. In the regression model, the predictor was added in Step 1. The moderator was added in Step 2, and the interaction term was added in Step 3. If there was a significant moderation, the multiplicative interaction between the predictor and the moderator would have been significant in the prediction of stigma. Using the procedure by Aiken and West (1991), simple slope analyses were calculated to examine whether the relationship between the predictor and the outcome is significant at low (-1 SD) and high (+1 SD) levels of the moderator. Plots were created to display the simple slopes of the moderated effects. We expected that those with higher contact/familiarity with transgender populations and a belief in the Theory of Essentialism would have less stigma and negative attitudes. However, even with less contact, those with biological beliefs in transgender would have less stigma and negative attitudes, regardless.
CHAPTER 4

RESULTS

Current Study Results

There is no research to our knowledge that examines the use of an educational module to improve stigma towards transgender populations. The purpose of this study was to implement an educational module to improve knowledge and reduce stigma towards transgender populations. This study also sought to establish the link of contact and familiarity with reduced stigma and negative attitudes toward transgender populations.

Data Coding

Researchers coded scales based on guidelines from past research and scale creators. Researchers also cleaned the data and checked for missing data. Since only 5% of the data were missing, we did not employ the AMOS software to compute moderated regression analyses (Arbuckle, 2014). All data were analyzed using SPSS v23. Furthermore, cases were deleted from the data with more than one incorrect response to Attention Check Questions. Once cases with missing data or incorrect Attention Check responses were deleted, we analyzed the data for outliers. Outliers that were beyond 4 standard deviations were determined as significant outliers and deleted from the dataset. Nine cases were deleted that were beyond 4 standard deviations. Two cases were deleted because participants identified as a gender other than male or female. Descriptive statistics were then computed to better understand
the overall characteristics of the study sample. Next, the study-specific analyses were computed for each hypothesis.

**Preliminary Analyses**

Descriptive analyses were conducted prior to examining additional statistical analyses. Descriptive statistics among key study variables are reported in Table 2. Additionally, correlational analyses were conducted and examined for key study variables (see Table 3; Table 4; Table 5). As expected, there were strong associations among key study variables. For example, both predictor variables of level of familiarity and level of contact had strong associations ($r = 0.63, p < .01; r = 0.62; p < .01$; see Table 3). The overall sample also showed associations for measures at pre- and post-test. For instance, this included outcome variables of pre- and post-test social distance ($r = 0.96, p < .01$; see Table 3), pre- and post-test positive affect ($r = 0.82, p < .01$; see Table 3), pre- and post-test negative attitudes toward transgender populations ($r = 0.95, p < .01$; see Table 3), and pre- and post-test knowledge ($r = 0.52, p < .01$; see Table 3). There were negative associations between level of contact measures and stigma/negative attitudes measures in the current study; these associations ranged from $r = -.36$ to $r = -.39$ ($p < .01$; see Table 3). The sample also indicated negative associations between level of familiarity and stigma/negative attitudes measures; the associations ranged from $r = -.26$ to $r = -.32$ ($p < .01$; see Table 3). See Tables 4 and 5 for correlational analyses separated by experimental and control group.
Table 1
Demographic Characteristics of Participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>Overall Sample (N = 221)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
</tr>
<tr>
<td>Age</td>
<td>18.73(1.16)</td>
</tr>
<tr>
<td>18 years old</td>
<td>56.9</td>
</tr>
<tr>
<td>19 years old</td>
<td>27.8</td>
</tr>
<tr>
<td>20 years old</td>
<td>8.3</td>
</tr>
<tr>
<td>21+ years old</td>
<td>2.3</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1.52(1.33)</td>
</tr>
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</tr>
<tr>
<td>Black</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Hispanic/Latino</td>
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</tr>
<tr>
<td>Native American</td>
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</tr>
<tr>
<td>Multiracial</td>
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</tr>
<tr>
<td>Other</td>
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</tr>
<tr>
<td>Sex</td>
<td>0.35(0.48)</td>
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<tr>
<td>Female</td>
<td>65.2</td>
</tr>
<tr>
<td>Male</td>
<td>34.8</td>
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Table 2
Descriptive Statistics of Study Measures in Overall Sample.

<table>
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<th>Overall Sample</th>
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<th>Maximum</th>
<th>M</th>
<th>SD</th>
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<td>Level of Familiarity (Average)</td>
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<td>Level of Familiarity (Rank)</td>
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<td>.00</td>
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<td>0.65</td>
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<td>1.00</td>
<td>3.50</td>
<td>1.54</td>
<td>0.51</td>
</tr>
<tr>
<td>Social Distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-</td>
<td>221</td>
<td>3.00</td>
<td>1.00</td>
<td>4.00</td>
<td>1.98</td>
<td>0.76</td>
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<tr>
<td>Post-</td>
<td>221</td>
<td>3.00</td>
<td>1.00</td>
<td>4.00</td>
<td>1.99</td>
<td>0.81</td>
</tr>
<tr>
<td>Negative Affect</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pre-</td>
<td>221</td>
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<td>1.30</td>
<td>7.00</td>
<td>4.88</td>
<td>1.31</td>
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<td>7.00</td>
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<tr>
<td>Attitudes Toward Transgender Populations</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pre-</td>
<td>221</td>
<td>3.50</td>
<td>1.40</td>
<td>4.90</td>
<td>3.76</td>
<td>0.80</td>
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<td>1.40</td>
<td>5.00</td>
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<td>0.16</td>
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<td>0.71</td>
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<tr>
<td>Post-</td>
<td>221</td>
<td>5.00</td>
<td>1.00</td>
<td>6.00</td>
<td>3.17</td>
<td>0.77</td>
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</table>
Table 3
Correlations Between Key Study Variables in Overall Sample

Note. **. Correlation is significant at the 0.01 level (2-tailed).

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Level of Familiarity (Average)</th>
<th>Level of Familiarity (Rank)</th>
<th>Level of Contact</th>
<th>Social Distance</th>
<th>Negative Affect</th>
<th>Attitudes Toward Transgender Populations</th>
<th>Knowledge</th>
<th>Devaluation-Discrimination</th>
<th>Essentialism</th>
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<td>Post-</td>
<td>Pre-</td>
<td>Post-</td>
<td>Pre-</td>
<td>Post-</td>
<td>Pre-</td>
<td>Post-</td>
<td>Post-</td>
</tr>
<tr>
<td>Level of Familiarity</td>
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<td>(Average)</td>
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<tr>
<td>Level of Familiarity</td>
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<tr>
<td>Level of Contact</td>
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<td>--</td>
<td>.62**</td>
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<tr>
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<td>-29**</td>
<td>-39**</td>
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<td>-.26**</td>
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<td>.96</td>
<td>.96**</td>
<td>--</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pre-</td>
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<td>.38**</td>
<td>-.80**</td>
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<td></td>
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- Pre- and Post- indicate pre- and post-intervention measurements.
### Table 4
**Correlations Between Key Study Variables in Experimental Sample**

*Note.** **Correlation is significant at the 0.01 level (2-tailed).*

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Assumptions of ANOVAs and Moderated Regressions

Although the sample size was large and exceeded requirements for power analyses, preliminary data screening was conducted to assess violations of the assumptions of ANOVAs. An examination of the histograms for the pre- and post-test knowledge scores in the overall sample showed that the distributions were slightly negatively skewed but symmetric enough. Additionally, we examined the histogram for the pre- and post-test knowledge scores by the experimental and control groups. The pre- and post-test experimental groups and the pre- and post-test control groups were quite symmetric. This symmetric pattern is also indicated by the P-P plots and the Q-Q plots which appear to only deviate slightly from normality, if at all. We also examined the Z-scores and the boxplots of the four groups of the knowledge measure, i.e., pre- and post-test measures across the experimental and control groups. The results revealed slightly extreme values for the pre-test control group. However, upon further examination of the Z-scores, there were no values greater than 3.45 SD from the mean; this suggested that there were no outliers. The Levene’s test showed that the variances were equal across the two groups i.e., pre-test ($F(1, 219) = 1.56, p = 0.21$) and the post-test knowledge scores, ($F(1, 219) = .601, p = 0.43$) across the two groups. These findings indicated that the variances were equal across both groups for pre-test and post-test knowledge scores.

An examination of the histograms for the pre- and post-test stigma (i.e., social distance, positive affect, and negative attitudes regarding transgender populations) scores in the overall sample showed that the distributions were adequately symmetric.
Furthermore, histograms were examined for the pre- and post-test stigma scores by experimental and control groups. The pre- and post-test experimental and control groups were quite symmetric as indicated by the histograms, the P-P plots, the Q-Q plots, and the skewness values. We also examined the Z-scores and the boxplots of the groups. The results revealed that the majority of stigma measures were normally distributed. Upon further examination of the Z-scores, none of the stigma values exceeded 2.99. This pattern suggests that there were no outliers in the stigma measures.

Additionally, the Levene’s test was used to assess the homogeneity of the variance in each stigma measure. Looking specifically at preferred social distance, the Levene’s test showed variances were equal across the two groups for both the pre-test ($F(1, 219) = 1.54, p = 0.22$) and post-test scores ($F(1, 219) = 0.69, p = 0.41$). In addition, the Levene’s test for positive affect revealed that the variances were equal across the two groups for the pre-test affect scores, ($F(1, 219) = 0.21, p = 0.65$) and post-test scores ($F(1, 219) = 0.05, p = 0.82$). Furthermore, the Levene’s test for negative attitudes toward transgender populations showed equal variances across the two groups for both pre-test ($F(1, 219) = 1.36, p = 0.24$) and post-test scores ($F(1, 219) = 0.01, p = 0.91$).

Further preliminary data screening was also conducted to assess violations of the assumptions for the Regressions. Outliers were examined by plotting the standardized residuals from the regression against the standardized predicted values. However, the graphs showed no indication of outliers, patterns, or trends, although
some outcome measures did suggest an indication of slight heteroscedasticity. This can be observed in scatterplots for the outcome variables of pre-test social distance, pre-test attitudes toward transgender individuals, and pre-test negative attitudes. Despite this assumption not being met, the violation appears to be slight, and the other assumptions of regression appear to be met. This slight assumption violation may have occurred due to more accurate responses from some participants than others (Williams, 2015). Heteroscedasticity may also occur if independent variables measure attitudes that can range from extremely negative to extremely positive (Williams, 2015). Although there was a slight violation of this assumption, it was not deemed problematic. Thus, the assumptions required for linear and moderated regressions (i.e., linearity, independence of errors, homoscedasticity, normally distributed errors, and multicollinearity of predictors) have been reasonably met.

Due to the dearth of prior research devoted to educational modules for LGBT populations, more specifically transgender populations, this study is exploratory. Overall, the main purpose of the current study was to establish connections between exposure to an educational module and stigma. We were mainly interested in further developing these links and establishing these connections for future research.

**Hypothesis 1**

Based on our hypothesis, it was expected that attitudes and stigma toward transgender populations would improve after being exposed to an educational module. Specifically, the experimental group would have less negative attitudes and stigma (i.e., higher positive affect, lower social distance, and lower negative attitudes)
than the control group during the post-test. The control group would show no change from the pre-test to post-test.

A 2 x 2 mixed ANOVA with one within-person repeated measures factor (i.e., pre- and post-stigma) and one between person factor (i.e., experimental group vs. control group) was conducted to assess the impact of the intervention (educational module) on participants’ attitudes and affect toward transgender populations. As expected, there was a statistically significant interaction for time (pre- vs. post-test) by condition (experimental vs. control) for positive affect ($F_{aXb} = (1, 219) = 13.85, p < .001$; see Table 6). The partial eta square is also reported, indicating medium effects (0.06; see Table 6). Simple effect tests to unpack the interaction effects using Bonferoni corrections showed that the experimental group means, when compared at Time 1 and Time 2, did show statistically significant differences between means: $F = (1, 219) = 49.19, p < .001$, and the control group did not show statistically significant difference between means when compared at Time 1 and Time 2: $F = (1, 219) = 2.86, p = .09$. The Table of cell means (see Table 7) indicated there was an increase in positive affect from pre- to ($M = 4.91, SD = 1.31$) post-test ($M = 5.81, SD = 1.38$) for the experimental group. The Table of cell means (see Table 7) also indicated there was not a significant change in positive affect from pre-test ($M = 4.84, SD = 1.32$) to post-test ($M = 4.91; SD = 1.35$) for the control group. Researchers also conducted a simple effects test to assess whether the module group differences were significant for the pre- and post-test separately. At pre-test, there was not a significant difference between the means of the experimental and control group: $F = (1, 219) = 0.15, p <
0.70. At post-test, there also was not a statistically significant difference between means of the experimental and control group: $F = (1, 219) = 2.11, p = 0.15$.

However, the difference between means was stronger for post-test, indicating that perhaps with a larger sample size it may be leading toward significance.

Although post hoc tests suggest these results may be marginal or are lacking in significant group differences, some statisticians do not unanimously accept tests of simple main effects (UCLA: Statistical Consulting Group, 2006). More specifically, statisticians express concerns with the conceptual error rate of simple main effects (UCLA: Statistical Consulting Group, 2006). Caution is urged in the interpretation of these tests as they are considered indicative but not conclusive (UCLA: Statistical Consulting Group, 2006). Findings with positive affect were somewhat consistent with the hypothesis. More specifically, the measure of positive affect increased, meaning there was an increase in positive attitudes at post-test after participants in the experimental group were exposed to the educational module (see Figure 2). However, this statistically significant interaction may need to be interpreted with caution since the groups were not different at pre- and post-test in the post hoc analyses.

Additionally, there was also a statistically significant interaction for time (pre- vs. post-test) and condition (experimental vs. control) for social distance: $F_{aXb} = (1, 219) = 4.18, p < .05$ (see Table 6). The partial eta square is also reported, indicating small effects (0.02; see Table 6). A simple effects test showed that pre-social distance ($M = 1.95, SD = 0.72$) to post-social distance ($M = 1.94, SD = 0.79$) did not indicate a significant change in means for the experimental group (see Table 7). Additionally,
pre-social distance \((M = 2.00, SD = 0.80)\) to post-social distance \((M = 2.04, SD = 0.83)\) indicated a small significant change in means for the control group (see Table 7). Simple effects tests were conducted to assess whether the module group differences were significant for the pre- and post-test separately. For the pre-test, there was not a statistically significant difference in means between experimental and control group: \(F (1, 219) = 0.17, p = 0.69\). At post-test, there also was not a statistically significant difference in means between experimental and control group: \(F (1, 219) = 0.88, p = 0.35\), suggesting that findings, although statistically significant, may need to be interpreted with caution. Also, findings with social distance, in terms of a statistically significant interaction effect, were not consistent with the hypothesis. The effects for social distance may be small as indicated by effect size (see Table 6). As discussed above, simple main effects test results should be interpreted with caution as they are not conclusive (UCLA: Statistical Consulting Group, 2006).

Although it was predicted that stigma would decrease for all measures, there was not a statistically significant interaction for the measure of positive attitudes toward transgender individuals: \(F_{aXb} = (1, 219) = .36, p = .55\) (see Table 4). There was also not a significant between-subject’s effect across the treatment groups: \(F_{aXb} = (1, 219) = .19, p = .66\). Furthermore, the Table of cell means (see Table 7) showed an increase in means for both experimental (pre-test \(M = 3.78, SD = 0.77\); post-test \(M = 3.83, SD = 0.83\)) and control groups (pre-test \(M = 3.74, SD = 0.83\); post-test \(M = 3.78, SD = 0.83\)) from pre-test to post-test. There was a significant within-subjects main
effect for time: $F = (1, 219) = 5.68, p, < .05$ (see Table 6; see Figure 3). This finding is supported by pairwise comparisons which showed an increase in positive attitudes for both groups from pre-test ($M = 3.77; SD = .80$) to post-test ($M = 3.80; SD = .83$).

Findings with attitudes toward transgender individuals partially support our hypothesis. The significant main effect for time indicates there was an increase in positive attitudes for both the control and experimental groups; thus, both groups increased in positive attitudes at the same rate (see Figure 3). In summary, there was an effect from pre- to post-test for an overall decrease in negative attitudes.
Table 6  
*Sphericity Assumed: Two-way Repeated Measures, Within-Subjects Effects ANOVAs*

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*Note.**. XXXX is significant at the 0.01 level (2-tailed).
Table 7
Two-way repeated measures, within-between group interaction ANOVAs

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<td></td>
<td></td>
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<td>1.96</td>
<td>0.07</td>
<td>1.81</td>
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<tr>
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<td>2.00</td>
<td>0.07</td>
<td>1.85</td>
<td>2.14</td>
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</tr>
<tr>
<td>Positive Affect</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Psychoeducational Module Group</td>
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<td>0.12</td>
<td>4.67</td>
<td>5.16</td>
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<tr>
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<td>5.09</td>
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</tr>
<tr>
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<td>3.93</td>
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<tr>
<td>Control Group</td>
<td>3.74</td>
<td>0.08</td>
<td>3.59</td>
<td>3.89</td>
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</tr>
</tbody>
</table>

66
Note. Values given represent the between group interaction.

Figure 1. Hypothesis 1 two-way within-subjects effects interaction ANOVA analyses examining change in social distance from pre- to post-test.
Note. Values given represent the between group interaction.

Figure 2. Hypothesis 1 two-way within-subjects effects interaction ANOVA analyses examining change in negative emotions regarding transgender populations from pre- to post-test.
Note. Values given represent the between group interaction.

Figure 3. Hypothesis 1 two-way within-subjects effects interaction ANOVA analyses examining regarding attitudes toward transgender populations pre- to post-test
Hypothesis 2

Furthermore, in addition to the predicted decrease in stigma and negative attitudes, it was hypothesized that knowledge about transgender populations would improve with the educational module. Specifically, it was expected that the experimental group would have a greater increase in knowledge from pre-test to post-test as compared to the control group. The control group was predicted to not have any change. Similar to Hypothesis 1, a 2 x 2 mixed ANOVA with one within-person repeated measures factor (i.e., pre- and post-stigma) and one between person factor (i.e., experimental group vs. control group) was conducted to assess the impact of the intervention (educational module) on participants’ scores on the Knowledge Questionnaire.

The results of the two-way ANOVA indicated a significant interaction effect of time by group for knowledge ($F_{aXb} (1, 219) = 87.83, p < .001$; see Table 8). The corresponding partial eta square (0.29) indicated a large effect (see Table 8). The Table of cell means (see Table 9) indicated the experimental group did show a significant increase in knowledge from pre-test ($M = 13.00, SD = 0.14$) to post-test ($M = 15.87, SD = 0.14$); however, the control group which received the neutral video did not indicate any significant increase in knowledge from pre-test ($M = 13.95, SD = 2.52$) to post-test ($M = 14.06, SD = 2.43$). Simple effects tests were conducted to assess whether the module group differences were significant at pre- and post-test separately. At pre-test, there was a statistically significant difference between the control group and the experimental group: $F = (1, 219) = 7.15, p < .01$. However, at
post-test, there was a stronger statistically significant difference between the control and experimental group: $F = (1, 219) = 30.04, p < .001$, suggesting, that although there was a difference between groups on knowledge at pre-test, it was stronger at post-test due to the acquisition of new knowledge from the psychoeducational module. Additionally, for the control group, there was not a statistically significant difference between means when comparing Time 1 and Time 2: $F = (1, 219) = 0.28, p = 0.60$. For the experimental group, there was a statistically significant difference between means when comparing time 1 and time 2: $F = (1, 219) = 192.55, p < .001$, indicating these findings are consistent with the hypothesis. See Figure 4.
### Table 8
**Sphericity Assumed: Two-way Repeated Measures, Within-Subjects Effects ANOVAs**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Square</th>
<th>Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
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<td>246.12</td>
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<td>102.38</td>
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<td>0.32</td>
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<td>211.15</td>
<td>1.00</td>
<td>87.83</td>
<td>.000**</td>
<td>0.29</td>
</tr>
<tr>
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<td>2.40</td>
<td>219.00</td>
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</tr>
</tbody>
</table>

*Note.* **. XXXX is significant at the 0.01 level (2-tailed).

### Table 9
**Two-way repeated measures, within-between group interaction ANOVAs**

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Standard Error</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
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<td></td>
<td></td>
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<td>Lower Bound</td>
</tr>
<tr>
<td>Knowledge</td>
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<td></td>
</tr>
<tr>
<td>Psychoeducational Module Group</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pre-</td>
<td>13.00</td>
<td>0.25</td>
<td>12.50</td>
</tr>
<tr>
<td>Post-</td>
<td>15.87</td>
<td>0.23</td>
<td>15.41</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-</td>
<td>13.95</td>
<td>0.25</td>
<td>13.45</td>
</tr>
<tr>
<td>Post-</td>
<td>14.06</td>
<td>0.24</td>
<td>13.60</td>
</tr>
</tbody>
</table>
Note. Values given represent the between group interaction.

Figure 4. Hypothesis 2 two-way within-subjects effects interaction ANOVA analyses examining change in knowledge from pre- to post-test
Hypothesis 3a – 3b

Hypothesis 3a predicted that a higher degree of contact with individuals who identify as transgender would be associated with less stigma and fewer negative attitudes at post-test. Furthermore, hypothesis 3b, at post-test, predicted that greater levels of familiarity with individuals who identify as transgender would be associated with less stigma and fewer negative attitudes. Multiple regression analysis was used to assess the effect of contact and familiarity with individuals who identified as transgender on the levels of stigma and negative attitudes (social distance, positive affect, devaluation-discrimination, attitudes toward transgender populations) at post-test, while controlling for sex. Statistically significant associations ($p < .01$) were established between all predictor variables (i.e., Transgender Contact Scale, Level of Familiarity; see Table 3). Furthermore, statistically significant associations ($p < .01$) were also established between all outcome variables (social distance, positive affect, attitudes toward transgender individuals, and devaluation-discrimination) with the exception of essentialism. Specifically, contact at post-test, was a significant predictor of social distance ($\beta = -.28, p < .001, R^2 = 0.07$), positive affect ($\beta = .30, p < .001, R^2 = 0.09$), attitudes toward transgender populations ($\beta = .27, p < .001, R^2 = 0.07$), and devaluation-discrimination ($\beta = -.29, p < .001, R^2 = 0.09$; see Table 10). Furthermore, contact at pre-test, was a significant predictor of social distance ($\beta = -.32, p < .001, R^2 = 0.10$), positive affect ($\beta = .32, p < .001, R^2 = 0.09$), and attitudes toward transgender populations ($\beta = .29, p < .001, R^2 = 0.08$; see Table 10). Additionally, familiarity (averaged) was a statistically significant predictor of post-test social distance ($\beta = -.21, p < .001, R^2 = 0.04$), positive
affect ($\beta = .23, p < .001, R^2 = 0.05$), attitudes toward transgender populations ($\beta = .24, p < .001, R^2 = 0.05$), and devaluation-discrimination ($\beta = -.26, p < .001, R^2 = 0.06$; see Table 11). Familiarity (averaged) was also found to be a statistically significant predictor of pre-test social distance ($\beta = -.23, p < .001, R^2 = 0.05$), positive affect ($\beta = .24, p < .001, R^2 = 0.05$), and attitudes toward transgender populations ($\beta = .26, p < .001, R^2 = 0.07$; see Table 11). Lastly, familiarity (rank measure) was a statistically significant predictor of post-test social distance ($\beta = -.19, p < .01, R^2 = 0.03$), positive affect ($\beta = .23, p < .001, R^2 = 0.05$), attitudes toward transgender populations ($\beta = .21, p < .001, R^2 = 0.04$), and devaluation-discrimination ($\beta = -.23, p < .001, R^2 = 0.05$; see Table 12).

Additionally, familiarity (rank measure) was a statistically significant predictor of pre-test social distance ($\beta = -.21, p < .001, R^2 = 0.04$), positive affect ($\beta = .24, p < .001, R^2 = 0.05$), and attitudes toward transgender populations ($\beta = .24, p < .001, R^2 = 0.06$; see Table 12). The hypothesis that higher degrees of contact and familiarity will be associated with less stigma and fewer negative attitudes, is supported by these findings.
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<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval</th>
<th>t-value</th>
<th>p-value</th>
<th>Total R² Change</th>
</tr>
</thead>
<tbody>
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<td>B</td>
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<td>Upper</td>
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<tr>
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<td>0.26</td>
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*Note.* XXXX is significant at the 0.05 level (2-tailed); **. XXXX is significant at the 0.01 level (2-tailed); ***. XXXX is significant at the 0.001 level (2-tailed).
Table 11
*Hypothesis 3a to 3b: Linear Regression models for Familiarity predicting all stigma measures.*

<table>
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<tr>
<th>Predictor</th>
<th>Outcome</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval</th>
<th>t-value</th>
<th>p-value</th>
<th>Total R² Change</th>
</tr>
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<tbody>
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<td>β</td>
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<td>Beta</td>
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<td>Upper</td>
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</tr>
<tr>
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<td></td>
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<tr>
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<td>(Constant) 2.20 0.12</td>
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<td>15.72</td>
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<td>-0.52</td>
<td>-3.32</td>
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<td>(Constant)</td>
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<td>3.28</td>
<td>3.83</td>
<td>25.54</td>
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<td>3.64</td>
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</table>

*Note. * . XXXX is significant at the 0.05 level (2-tailed); **. XXXX is significant at the 0.01 level (2-tailed); ***. XXXX is significant at the 0.001 level (2-tailed).
Table 12

Hypothesis 3a to 3b: Linear Regression models for Familiarity (rank measures) predicting all stigma measures.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval</th>
<th>t-value</th>
<th>p-value</th>
<th>R² Change</th>
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<td>Std. Error</td>
<td>Beta</td>
<td>Lower</td>
<td>Upper</td>
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<td>Pre-</td>
<td>(Constant)</td>
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<td>20.93</td>
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</tr>
<tr>
<td></td>
<td>(Constant)</td>
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</tbody>
</table>

Note. *: XXXX is significant at the 0.05 level (2-tailed); **: XXXX is significant at the 0.01 level (2-tailed); ***: XXXX is significant at the 0.001 level (2-tailed).
Hypothesis 4

It was predicted that having knowledge about transgender populations would predict less stigma and fewer negative attitudes at post-test. Multiple regression was used to assess the associations of knowledge with levels of stigma and negative attitudes (social distance, positive affect, devaluation-discrimination, attitudes toward transgender populations) while controlling for sex. Statistically significant findings indicate that having acquired knowledge about transgender populations at post-test is a significant predictor of post-test social distance ($\beta = -.35, p < .001, R^2 = 0.12$), positive affect ($\beta = .28, p < .001, R^2 = 0.08$), attitudes toward transgender populations ($\beta = .33, p < .001, R^2 = 0.11$), and devaluation-discrimination ($\beta = -.33, p < .001, R^2 = 0.11$; see Table 13). Furthermore, statistically significant analyses indicate that having acquired knowledge about transgender populations is a significant predictor of pre-test social distance ($\beta = -.31, p < .001, R^2 = 0.09$), positive affect ($\beta = .24, p < .001, R^2 = 0.05$), and attitudes toward transgender populations ($\beta = .36, p < .001, R^2 = 0.12$; see Table 13). These findings provide support for hypothesis 4 that greater knowledge about transgender populations is associated with less stigma and fewer negative attitudes.
Table 13

**Hypothesis 4: Linear Regression models for Knowledge predicting all stigma measures.**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Outcome</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval</th>
<th>t-value</th>
<th>p-value</th>
<th>Total R² Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>β</td>
<td>Std. Error</td>
<td>Beta</td>
<td>Lower</td>
<td>Upper</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unstandardized</td>
<td>Standardized</td>
<td>95% Confidence Interval</td>
<td>t-value</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>β</td>
<td>Std. Error</td>
<td>Beta</td>
<td>Lower</td>
<td>Upper</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>3.00</td>
<td>0.25</td>
<td>--</td>
<td>2.51 3.50</td>
<td>12.03 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Know</td>
<td>-1.68</td>
<td>0.33</td>
<td>-0.31</td>
<td>-2.33 -1.02</td>
<td>-5.06 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>3.40</td>
<td>0.28</td>
<td>--</td>
<td>2.85 3.95</td>
<td>12.09 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Know</td>
<td>-2.04</td>
<td>0.34</td>
<td>-0.35</td>
<td>-2.72 -1.36</td>
<td>-5.94 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>3.35</td>
<td>0.09</td>
<td>2.86</td>
<td>3.84 13.46</td>
<td>.000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Devaluation-Discrimination</td>
<td>Know</td>
<td>-1.68</td>
<td>0.31</td>
<td>-0.33 -2.28</td>
<td>-5.52 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>2.51</td>
<td>0.25</td>
<td>--</td>
<td>2.02 3.01</td>
<td>10.05 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Know</td>
<td>2.02</td>
<td>0.33</td>
<td>0.36</td>
<td>1.37 2.67</td>
<td>6.08 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>2.44</td>
<td>0.29</td>
<td>--</td>
<td>1.87 3.00</td>
<td>8.52 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Know</td>
<td>2.01</td>
<td>0.35</td>
<td>0.33</td>
<td>1.32 2.70</td>
<td>5.73 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pre-</td>
<td>Knowledge</td>
<td>3.56</td>
<td>0.45</td>
<td>-- 2.68</td>
<td>7.93 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>3.56</td>
<td>0.45</td>
<td>--</td>
<td>2.68 4.45</td>
<td>7.93 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-</td>
<td>Knowledge</td>
<td>2.22</td>
<td>0.60</td>
<td>0.24 1.05</td>
<td>3.40 3.72 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>2.22</td>
<td>0.60</td>
<td>0.24</td>
<td>1.05 3.40</td>
<td>3.72 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-</td>
<td>Knowledge</td>
<td>3.14</td>
<td>0.50</td>
<td>-- 2.15</td>
<td>6.24 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>3.14</td>
<td>0.50</td>
<td>--</td>
<td>2.15 4.14</td>
<td>6.24 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positive Affect</td>
<td>Knowledge</td>
<td>2.78</td>
<td>0.62</td>
<td>0.28 1.57</td>
<td>4.00 4.52 .000***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Constant)</td>
<td>2.78</td>
<td>0.62</td>
<td>0.28</td>
<td>1.57 4.00</td>
<td>4.52 .000***</td>
</tr>
</tbody>
</table>

*Note.* *. XXXX is significant at the 0.05 level (2-tailed); **. XXXX is significant at the 0.01 level (2-tailed); ***. XXXX is significant at the 0.001 level (2-tailed).
Hypothesis 5a – 5b

Hypothesis 5 predicted that a belief in the theory of essentialism would moderate the relationship between contact and stigma/negative attitudes toward transgender populations at post-test. Specifically, hypothesis 5a was that those who have higher contact with transgender populations and a belief in a biological theory would have less stigma and negative attitudes at post-test. Furthermore, hypothesis 5b predicted that a belief in the theory of essentialism would moderate the relationship between familiarity and stigma/negative attitudes toward transgender populations at post-test. Specifically, those who have higher familiarity with transgender populations and a belief in a biological theory would have less stigma and negative attitudes at post-test. However, it was expected that even with less familiarity or contact, those with beliefs in the biological explanation of transgender would have less stigma and negative attitudes.

Linear moderated regression analysis was used to assess the moderating role of Essentialism in the relationship between contact/familiarity (Transgender Contact Scale, LOF) with transgender populations and stigma/negative attitudes at post-test. Findings indicate there was little to no support for essentialism as a moderator between the relationship of contact and social distance ($\beta = .13, p = .66$), positive affect ($\beta = .04, p = .89$), attitudes toward transgender individuals ($\beta = .06, p = .85$), and devaluation-discrimination ($\beta = .04, p = .89$; see Tables 14–17). Hypothesis 5a was not supported.
Table 14

**Hypothesis 5a: Regression Model examining the moderating effects of essentialism on the level of contact and social distance regarding stigma toward transgender populations.**

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Contact</td>
<td>-0.73</td>
<td>0.39</td>
<td>-0.46</td>
<td>.060</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.00</td>
<td>0.21</td>
<td>-0.00</td>
<td>.989</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.05</td>
<td>0.12</td>
<td>0.13</td>
<td>.663</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Contact x Essentialism.*

Dependent Variable: Post-Social Distance

* p <0.05, two-tailed test ** p <0.001, two-tailed test

---

Table 15

**Hypothesis 5a: Regression Model examining the moderating effects of essentialism on the level of contact and positive affect regarding stigma toward transgender populations.**

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Contact</td>
<td>0.90</td>
<td>0.66</td>
<td>0.34</td>
<td>0.17</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.05</td>
<td>0.35</td>
<td>-0.03</td>
<td>-.747</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.03</td>
<td>0.20</td>
<td>0.04</td>
<td>.892</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Contact x Essentialism.*

Dependent Variable: Post-Positive Affect

* p <0.05, two-tailed test ** p <0.001, two-tailed test
Table 16

*Hypothesis 5a: Regression Model examining the moderating effects of essentialism on the level of contact and attitudes toward transgender populations regarding stigma toward transgender populations.*

Overall Sample (N = 221)

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Contact</td>
<td>0.50</td>
<td>0.40</td>
<td>0.31</td>
<td>.207</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.12</td>
<td>0.21</td>
<td>-0.11</td>
<td>.572</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.02</td>
<td>0.12</td>
<td>0.06</td>
<td>.848</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Contact x Essentialism.*

Dependent Variable: Post-Attitudes Toward Transgender Individuals

* p <0.05, two-tailed test ** p <0.001, two-tailed test

Table 17

*Hypothesis 5a: Regression Model examining the moderating effects of essentialism on the level of contact and devaluation-discrimination regarding stigma toward transgender populations.*

Overall Sample (N = 221)

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Contact</td>
<td>-0.55</td>
<td>0.34</td>
<td>-0.40</td>
<td>.107</td>
</tr>
<tr>
<td>Essentialism</td>
<td>0.01</td>
<td>0.18</td>
<td>0.01</td>
<td>.979</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.01</td>
<td>0.10</td>
<td>0.04</td>
<td>.893</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Contact x Essentialism.*

Dependent Variable: Devaluation-Discrimination

* p <0.05, two-tailed test ** p <0.001, two-tailed test
Furthermore, findings also indicate there was little to no support for essentialism as a moderator between the relationship of familiarity (averaged) and social distance ($\beta = .05, p = .40$), positive affect ($\beta = -.01, p = .85$), attitudes toward transgender individuals ($\beta = -.01, p = .79$), and devaluation-discrimination ($\beta = .03, p = .65$; see Tables 18–21). Hypothesis 5b was not supported.

Table 18

_Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (average) and social distance regarding stigma toward transgender populations._

<table>
<thead>
<tr>
<th>Overall Sample (N =221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity</td>
<td>-1.67</td>
<td>0.40</td>
<td>0.27</td>
<td>.000</td>
</tr>
<tr>
<td>(Average)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essentialism</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>.284</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.47</td>
<td>0.55</td>
<td>0.05</td>
<td>.400</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>0.08</td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Familiarity (Averaged) x Essentialism. Dependent Variable: Post-Social Distance*

* p <0.05, two-tailed test ** p <0.001, two-tailed test*
Table 19

*Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (average) and positive affect regarding stigma toward transgender populations.*

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity (Average)</td>
<td>3.01</td>
<td>0.69</td>
<td>0.29</td>
<td>.000</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.00</td>
<td>0.12</td>
<td>-0.00</td>
<td>.923</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.17</td>
<td>0.95</td>
<td>-0.01</td>
<td>.852</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>0.08</td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Familiarity (Averaged) x Essentialism. Dependent Variable: Post-Positive Affect*

* p <0.05, two-tailed test ** p <0.001, two-tailed test

Table 20.

*Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (average) and attitudes toward transgender populations regarding stigma toward transgender populations.*

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity (Average)</td>
<td>1.93</td>
<td>0.41</td>
<td>0.30</td>
<td>.000</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.08</td>
<td>0.07</td>
<td>-0.07</td>
<td>.269</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.15</td>
<td>0.56</td>
<td>-0.01</td>
<td>.792</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>0.10</td>
</tr>
</tbody>
</table>

*Note: Interaction is defined as Level of Familiarity (Averaged) x Essentialism. Dependent Variable: Post-Attitudes Toward Transgender Individuals*

* p <0.05, two-tailed test ** p <0.001, two-tailed test
Note: Interaction is defined as Level of Familiarity (Averaged) x Essentialism
Dependent Variable: Devaluation-Discrimination
* p <0.05, two-tailed test ** p <0.001, two-tailed test

Additionally, findings also indicate there was little to no support for essentialism as a moderator between the relationship of familiarity (rank) and social distance ($\beta = .36, p = .26$), positive affect ($\beta = -.26, p = .42$), attitudes toward transgender individuals ($\beta = .13, p = .66$), and devaluation-discrimination ($\beta = .28, p = .38$; see Tables 22–25). Hypothesis 5b was not supported. In summary, hypotheses 5a and 5b are not supported by these findings.
Table 22

Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (rank) and social distance regarding stigma toward transgender populations.

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity (Rank)</td>
<td>-0.74</td>
<td>0.38</td>
<td>-0.60</td>
<td>.051</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.07</td>
<td>0.14</td>
<td>-0.06</td>
<td>.631</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.14</td>
<td>0.12</td>
<td>0.36</td>
<td>.255</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Interaction is defined as Level of Familiarity (Rank) x Essentialism.

Dependent Variable: Post-Social Distance

* p <0.05, two-tailed test ** p <0.001, two-tailed test

Table 23

Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (rank) and positive affect regarding stigma toward transgender populations.

<table>
<thead>
<tr>
<th>Overall Sample (N = 221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity (Rank)</td>
<td>1.13</td>
<td>0.64</td>
<td>0.53</td>
<td>.000</td>
</tr>
<tr>
<td>Essentialism</td>
<td>0.18</td>
<td>0.24</td>
<td>0.10</td>
<td>.440</td>
</tr>
<tr>
<td>Interaction</td>
<td>-0.16</td>
<td>0.20</td>
<td>-0.26</td>
<td>.417</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Interaction is defined as Level of Familiarity (Rank) x Essentialism.

Dependent Variable: Post-Positive Affect

* p <0.05, two-tailed test ** p <0.001, two-tailed test
Note: Interaction is defined as Level of Familiarity (Rank) x Essentialism.
Dependent Variable: Post-Attitudes Toward Transgender Individuals
* p <0.05, two-tailed test ** p <0.001, two-tailed test

Table 24
Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (rank) and attitudes toward transgender individuals regarding stigma toward transgender populations.

<table>
<thead>
<tr>
<th>Overall Sample (N =221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity (Rank)</td>
<td>-0.73</td>
<td>0.39</td>
<td>-0.46</td>
<td>.060</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.00</td>
<td>0.21</td>
<td>-0.00</td>
<td>.989</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.05</td>
<td>0.12</td>
<td>0.13</td>
<td>.663</td>
</tr>
<tr>
<td>Total</td>
<td>0.05</td>
<td>0.12</td>
<td>0.28</td>
<td>.381</td>
</tr>
</tbody>
</table>

Note: Interaction is defined as Level of Familiarity (Rank) x Essentialism.
Dependent Variable: Post-Attitudes Toward Transgender Individuals
* p <0.05, two-tailed test ** p <0.001, two-tailed test

Table 25.
Hypothesis 5b: Regression Model examining the moderating effects of essentialism on the level of familiarity (rank) and devaluation-discrimination regarding stigma toward transgender populations.

<table>
<thead>
<tr>
<th>Overall Sample (N =221)</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Sig.</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Level of Familiarity (Rank)</td>
<td>-0.60</td>
<td>0.33</td>
<td>-0.55</td>
<td>.068</td>
</tr>
<tr>
<td>Essentialism</td>
<td>-0.08</td>
<td>0.12</td>
<td>-0.08</td>
<td>.528</td>
</tr>
<tr>
<td>Interaction</td>
<td>0.09</td>
<td>0.10</td>
<td>0.28</td>
<td>.381</td>
</tr>
<tr>
<td>Total</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Interaction is defined as Level of Familiarity (Rank) x Essentialism.
Dependent Variable: Post-Attitudes Toward Transgender Individuals
* p <0.05, two-tailed test ** p <0.001, two-tailed test
An exploratory analysis with the biological theory of transgender manipulation check scale was conducted to check whether this measure would serve as a moderator of contact/familiarity with stigma. This moderation was tested since the manipulation check variable (unlike the essentialism variable) specifically pertained to a biological explanation of transgender. These items asked participants if they believed that being transgender, specifically, was related to genetics. After running moderation analyses with this variable, the predictor variables, and the outcome variables, findings were similar to the moderation analyses with essentialism. However, findings did indicate that the biological theory manipulation check was significantly associated with lower stigma. Results indicate that despite the biological theory manipulation check not being a significant moderator of the relationship between contact/familiarity and stigma/negative attitudes, those who attribute transgender to genetic causes, regardless of contact or familiarity, are more likely to have more positive attitudes toward transgender populations. This statistically significant relationship was observed when investigating the moderation analysis output. After observing this interaction, regression analyses were examined to better understand the relationship. As noted in Table 26, findings indicate that the biological theory manipulation check is a significant predictor of attitudes toward transgender individuals ($\beta = .13, p < 0.05, R^2 = 0.02$) and devaluation-discrimination ($\beta = -.15, p < 0.05, R^2 = 0.04$). However, the outcome variable of post-test social distance ($\beta = .12, p = 0.05, R^2 = 0.02$) and post-test positive attitudes was marginally predicted by the biological theory manipulation check ($\beta = -.11, p < 0.10, R^2 = 0.01$);
see Table 26). This exploratory analysis of a biological theory manipulation check being associated with stigma outcome measures is supported by these findings.
Table 26

**Hypothesis 5: Exploratory Analysis: Linear Regression Model biological theory manipulation check predicts all stigma measures**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95% Confidence Interval</th>
<th>t-value</th>
<th>p-value</th>
<th>Total $R^2$</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>Std. Error</td>
<td>Beta</td>
<td>Lower</td>
<td>Upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social Distance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-</td>
<td>(Constant)</td>
<td>1.48</td>
<td>0.16</td>
<td>--</td>
<td>1.17</td>
<td>1.79</td>
<td>9.43</td>
</tr>
<tr>
<td>Bio Theory</td>
<td></td>
<td>0.08</td>
<td>0.04</td>
<td>0.12</td>
<td>0.00</td>
<td>0.15</td>
<td>1.96</td>
</tr>
<tr>
<td><strong>Positive Affect</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-</td>
<td>(Constant)</td>
<td>5.79</td>
<td>0.27</td>
<td>5.25</td>
<td>6.33</td>
<td>21.13</td>
<td>.000***</td>
</tr>
<tr>
<td>Bio Theory</td>
<td></td>
<td>-0.11</td>
<td>0.07</td>
<td>-0.11</td>
<td>-0.25</td>
<td>0.02</td>
<td>-1.68</td>
</tr>
<tr>
<td><strong>ATTI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-</td>
<td>(Constant)</td>
<td>1.75</td>
<td>0.14</td>
<td>--</td>
<td>1.48</td>
<td>2.03</td>
<td>12.71</td>
</tr>
<tr>
<td>Bio Theory</td>
<td></td>
<td>0.07</td>
<td>0.03</td>
<td>0.13</td>
<td>0.00</td>
<td>0.14</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Devaluation-Discrimination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-</td>
<td>(Constant)</td>
<td>4.40</td>
<td>0.16</td>
<td>--</td>
<td>4.09</td>
<td>4.71</td>
<td>27.76</td>
</tr>
<tr>
<td>Bio Theory</td>
<td></td>
<td>-0.10</td>
<td>0.04</td>
<td>-0.15</td>
<td>-0.17</td>
<td>-0.02</td>
<td>-2.46</td>
</tr>
</tbody>
</table>

*Note.* *. XXXX is significant at the 0.05 level (2-tailed); **. XXXX is significant at the 0.01 level (2-tailed); ***. XXXX is significant at the 0.001 level (2-tailed).
CHAPTER 5

CONCLUSION

Discussion

An examination of prior research reveals that there is a dearth of research focused on the use of an educational module to improve stigma towards transgender populations. The current study is the among the first to examine the use of an educational module for increasing knowledge about transgender populations, as well as the first to examine the relationship between increased knowledge and stigma towards transgender populations, and the association between essentialism and negative attitudes toward transgender populations. Although it was expected that stigma and negative attitudes would decrease, it was expected that this decline would be slight because changing stigma and attitudes is a challenging task. Additionally, given the prevalence and seriousness of stigma towards transgender populations, changing attitudes will be a slow process that may require multiple interventions over a period of time. It may be noted that although it was not expected for our educational module to drastically change attitudes, it was expected for this module to serve as a stepping stone to guide future intervention research. Additionally, while we expect knowledge about transgender populations to improve for the experimental group after receiving the educational module, we expect the increments to be small. Despite a small decrease in negative attitudes, this research will inform the sparse literature on anti-stigma interventions and increase knowledge on transgender populations.
Summary

Although the acceptance of sexual and gender minority individuals has continued to grow with increased awareness, the stigma and negative attitudes these individuals perpetually experience is still astonishingly high (Grant et al., 2011). The experience of stigma by transgender individuals has detrimental effects on their overall adjustment and well-being. Specifically, stigma leads to increased rates of suicide, sexual assault, physical assault, hate crime, and unemployment among many others (Grant et al., 2011; NCAVP, 2013; OVC, 2014). Although the impact of stigma on transgender individuals is quite apparent and continues to be reported in the media and documented in empirical research, there are fewer intervention efforts that seek to improve stigma and negative attitudes toward transgender populations.

Past interventions that have emphasized the reduction of stigma toward marginalized populations have also focused on increasing contact and familiarity (Brown, 2012; Costa & Davies, 2012; Strong & Arsiwalla, 2016). These interventions have been largely used to reduce stigma towards those who experience mental illness or use substances (Brown, 2012; Strong & Arsiwalla, 2016). However, educational interventions to increase positive attitudes have also been largely utilized in populations such as those with mental illness, intellectual disabilities, autism, and HIV/AIDS among others (Brown, 2010; Brown et al., 2010; Campbell et al., 2003; Obeid et al., 2015; Seewooruttum & Scior, 2014). Educational workshops and interventions have also become common in the professional domain to serve as continuing education. However, one area where educational interventions have rarely
been utilized are LGBT populations, more specifically transgender populations (Case et al., 2009). The present study aimed to further understand the utilization of an educational module to improve attitudes toward transgender populations and to fill the gap in research on the use of educational modules for sexual orientation and gender minority populations.

Furthermore, the purpose of this study was to examine the role of knowledge, in the form of an educational module, and its ability to improve stigma and negative attitudes towards transgender populations. Another focus of the study was to investigate whether knowledge about transgender populations could be improved via an online educational module. Researchers also sought to advance the understanding of the relationship between contact/familiarity and its ability to predict stigma and negative attitudes. More specifically, it was examined if increased contact and familiarity lead to decreased stigma and negative attitudes of transgender populations. Lastly, this study serves to fill the gap in research on a biological hypothesis of transgender (i.e., essentialism) as a moderator between the relationship of contact and familiarity with stigma and negative attitudes.

Findings indicated partial support for hypothesis 1, which predicted that the implementation of an educational module would reduce negative attitudes and stigma (i.e., positive affect, social distance, and attitudes toward transgender populations) toward transgender populations from pre- to post-assessment. More specifically, the educational module appeared to reduce stigma and negative attitudes toward transgender populations from pre-to post-test for measures of positive affect.
However, after examining post hoc analyses, these results may need to be interpreted with caution. Simple effects tests indicated that although the experimental group had an increase at post-test, the module and control groups were not significantly different from each other at both pre- and post-test. Simple effects tests may need to be considered with caution because of inconsistencies, and simple main effects are not unanimously accepted by statisticians due to concerns with the conceptual error rate (UCLA: Statistical Consulting Group, 2006).

Additionally, the results for the outcomes variable of social distance were inconsistent with our hypothesis. Social distance was predicted to decrease from pre-to post-test with the implementation of an educational module. Results indicated the experimental group had no significant change from pre-to post-test although the control group had a slight increase. These results were further established by simple effects tests; however, this finding may need to be interpreted with caution since simple effects test may be prone to error (UCLA: Statistical Consulting Group, 2006).

Also, for social distance, the control group increased at post-test (see Figure 1). A change in the control group (i.e., increase in stigma) may suggest that those who hold stigma and negative attitudes toward transgender populations can be impacted by exposure to transgender material; this may explain what appears to be an increase in stigma and negative attitudes. This potential increase in stigma may also be explained by the directness of item content for the social distance items toward participants. However, when further exploring post hoc analyses there was no change
in the experimental group from pre-to post-assessment despite the increase in the control group.

Lastly, the educational module did not appear to have a clear effect on the measure of positive attitudes toward transgender populations. However, when examining the within-subjects main effect for time, there was a decrease in negative attitudes for both the control and experimental groups. Specifically, both groups reported an increase in positive attitudes from pre- to post-test. Interestingly, the control group, although not exposed to the educational module, also had an increase in positive attitudes from pre- to post-test. Overall, there was an overall effect of time for positive attitudes from pre- to post-test, indicating an increase in positive attitudes at the same rate for both groups from pre- to post-test. This may suggest that exposure to transgender-related material or survey items motivates participants to examine current attitudes or beliefs held towards transgender populations, thereby eliciting a slight change in attitudes.

Although these results are somewhat inconsistent with our hypotheses, findings do appear to be consistent or similar to past literature that has implemented psychoeducational modules or interventions with the purpose of reducing stigma with knowledge (Iverson & Seher, 2014; Liddle & Stowe, 2002; Obeid et al., 2015; Oldham & Kasser, 1999; Piskur & Degelman, 1992; Stevenson, 1988). The findings from this study and past literature on educational modules with other marginalized populations suggest attitudes have the potential to be malleable with the presentation of knowledge, but overall results have been inconsistent or inconclusive (Dueweke &
Results from the current study demonstrate similar inconsistent findings. There are several possible explanations as to why our study found inconsistencies with this effect. Past studies that have investigated the effect of education on stigma suggest the effect can be weakened if individuals are asked to recall experiences with said stigmatized population (Penn, Kommana, Mansfield, & Link, 1999). This was asked of the participants in the current study by measuring participants’ level of contact and familiarity with transgender populations. Literature examining education to reduce stigma also indicates that “brief and passive psychoeducation” may provide a less than adequate amount of knowledge to elicit any type of attitude or stigma change (Dueweke & Bridges, 2017, p. 37). Attitude change or stigma reduction that has been documented in past research has at times found inconclusive findings because of the gap in longitudinal measurement in this research area or the lack of an effect over time (Case & Stewart, 2013). The current study also did not follow up longitudinally with study participants, making it difficult to conclude whether the attitude change that was demonstrated in the findings continued over time. Inconsistencies in previously discussed analyses also make conclusive interpretations of effects and data difficult. The current findings that were inconsistent with our hypotheses, are also consistent with past literature that has not been able to support that knowledge about marginalized groups can reduce negative attitudes and stigma (Dueweke & Bridges, 2017; Han & Chen, 2014). Results inconsistent with predicted hypotheses may also be attributable to low power.
Furthermore, findings indicated support for hypothesis 2. Hypothesis 2 explored whether the implementation of the educational module would increase knowledge about transgender populations from pre-to post-test. This finding has been supported by past literature (Dueweke & Bridges, 2017; Han & Chen, 2014). Past literature demonstrates that with the presentation of accurate information, increased learning can occur (Dueweke & Bridges, 2017; Han & Chen, 2014). These findings are consistent with past literature that has investigated the ability of participants to acquire new knowledge (Campbell et al., 2003; Guth et al., 2001; MacDonald & McIntyre, 1999; Seewooruttum & Scior, 2014). Research that has aimed to provide participants with new and accurate information has also largely aimed to reduce stigma (Campbell et al., 2003; Guth et al., 2001; Hodson et al., 2009; Iverson & Seher, 2014; MacDonald & McIntyre, 1999; Seewooruttum & Scior, 2014). Based on the findings in the current study, the increase in knowledge also demonstrates that educational modules can be used as a successful medium to disseminate knowledge. These findings support the continued dissemination of education and accurate information about minority groups because this process can be successful in improving acquired knowledge. Specifically, to improve knowledge about transgender populations, programs such as Safe Zone Training (e.g., training programs developed to make university campuses more inclusive for LGBTQ populations; Safe Zone Project, 2016), professional learning modules, or diversity seminars should be promoted or perhaps become a requirement in environments where individuals work and interact with minority groups on a frequent basis. With
continued advocacy and research, educational modules and accurate information, in general, can serve as a device that is instrumental in educating the public. Although the overall effect of knowledge to reduce stigma may be inconsistent, the ability of a psychoeducational module to improve knowledge about a largely stigmatized population is encouraging for future research.

Additionally, hypothesis 3 was supported, which examined the relationship of contact and familiarity in predicting stigma and negative attitudes toward transgender populations at post-test. Both the level of familiarity and the level of contact significantly predicted all outcome variables (i.e., social distance, negative attitudes, attitudes toward transgender populations, and devaluation-discrimination). Specifically, when there is an increase in either contact or familiarity, there is a decrease in stigma and negative attitudes or increase in positive attitudes. Past research on attitudes toward transgender populations and sexual minorities have found similar findings (Case & Stewart, 2013; Iverson & Seher, 2014; King et al., 2009; Liddle & Stowe, 2002; Oldham & Kasser, 1999; Piskur & Degelman, 1992; Stevenson, 1988). Past research has shown that with increased contact with transgender populations, those who do not identify as transgender tend to have more positive and receptive attitudes (Case & Stewart, 2013; King et al., 2009). Much research that has investigated attitudes of gender and sexual minorities has done so jointly, and the findings of these studies are consistent the current study findings. Ensuring this relationship between contact/familiarity and reduced stigma exists for gender minority populations is a fundamental step in furthering research to combat
the stigma experienced by individuals who identify as transgender. Additionally, the finding that this relationship exists for transgender populations is crucial for future research to continue to expose individuals to stigmatized populations. With continued exposure, negative attitudes and stigma can be predicted to have sustained decreases over time.

Hypothesis 4 was also supported by the current study findings. Hypothesis 4 examined the relationship between knowledge and the association between stigma and negative attitudes at post-test. Knowledge was found to be significantly associated with all stigma and negative attitudes measures (i.e., social distance, negative attitudes, attitudes toward transgender populations, and devaluation-discrimination). More specifically, when knowledge was higher, stigma and negative attitudes were found to be lower. This finding is supported by past research, such that having increased knowledge about a population can be interpreted as having a higher degree of familiarity or contact with that population, thus leading to more positive perceptions and attitudes and less stigma (Alexander & Link, 2003). Alexander and colleagues (2003) posit that both voluntary and involuntary contact has the ability to reduce stigma similarly. Knowledge, within this study, is used as a form of contact, and past literature widely supports that increased contact and familiarity are associated with fewer negative attitudes and stigma (Alexander & Link, 2003; Allport, 1954; Brewer, 2007; Brown, 2012; Costa & Davies, 2012; Strong & Arsiwalla, 2016). Furthermore, past research has also supported the concept that individuals who have more knowledge about a population tend to have more
accepting attitudes (Alexander & Link, 2003; Chan et al., 2009). Thus, current findings that a higher degree of knowledge is associated with fewer negative attitudes and stigma are consistent with prior research on marginalized populations.

The last hypothesis, hypothesis 5, was not supported by the findings. Hypothesis 5 examined the theory of essentialism as a moderator of the relationship between contact and familiarity and stigma and negative attitudes. Researchers expected to find that essentialism would significantly moderate the relationship between contact/familiarity and stigma and negative attitudes. Despite the lack of support for this finding, this should not deter researchers from further investigating the relationship between stigma or negative attitudes and the theory of essentialism. Although there are mixed results on past research with the theory of essentialism (Kvaale, Gottdiener, & Haslam, 2013; Kvaale, Haslam, & Gottdiener, 2013), very little has been investigated with this theory for gender and sexual minorities (Worthen, 2012). This lack of finding may be explained by past research that has found similar inconclusive findings with sexual orientation or minority innateness (Grzanka, Zeiders, & Miles, 2015). A belief in a biological theory of transgender may not be indicative of fewer negative attitudes toward transgender populations if most participants already believe gender is an innate process (Grzanka et al., 2015). Instead, the idea of essentialism or believing an individual has a certain “gene” may tell us less about a participant’s attitudes and more about an environmental or cultural background (Grzanka et al., 2015; Jang & Lee, 2014). Despite the lack of significant
findings, further understanding this relationship may help future researchers, clinicians, and generations change the aura of stigma around transgender populations.

Due to the lack of support for hypothesis 5, researchers chose to run exploratory analyses with a researcher developed manipulation check that asked questions similar to the essentialism scale, although, these questions were more specific to identifying as transgender, rather than overall genetics and biology (See Appendix L). The exploratory analyses for hypothesis 5 included examining the relationship between the post-biological theory manipulation check and stigma and negative attitudes. Findings suggest the biological manipulation check construct was associated with outcome measures including attitudes toward transgender populations and devaluation-discrimination. The biological manipulation check was not found to be associated with the outcome measure of positive attitudes and social distance. More specifically, these findings suggest those who have a belief that identifying as transgender is related to biology or genetics may have fewer negative attitudes and less stigma, regardless of contact. Past research that has found similar findings for sexual minorities suggests a support of a biological belief in sexual orientation may suggest that identifying as LGB may be viewed as something that “cannot be changed” (Worthen, 2013). This study hoped to find similar results with the transgender identity. Similar past research, although limited, has also noted a reduction in negative attitudes toward sexual minorities when accurate biological information has been presented (Liddle & Stowe, 2002; Oldham & Kasser, 1999; Piskur & Degelman, 1992). The current study findings have implications for future
stigma research. Disseminating research that may provide biological explanations for identifying as transgender to lay persons and those who have stigmatized beliefs may lead to reductions in stigma.

With regard to all hypotheses, it is crucial to consider our sample characteristics and the potential effects they may have on findings. For example, the majority of our sample was white, largely female, in the process of achieving higher education, and from a Midwestern state. When considering past research, which suggests women who are more highly educated tend to have positive attitudes, our sample may be suggestive of already being less stigmatizing toward transgender populations (Barringer et al., 2013; Costa & Davies, 2012; Norton & Herek, 2012; Winter et al., 2008; Worthen, 2012). Furthermore, the culture at the University of Northern Iowa is quite receptive and progressive towards equality and the acceptance of minority populations such as transgender individuals. These factors and potentially pre-established positive attitudes may have affected our results. For example, findings with this study may have been vastly different if participants of our sample were largely conservative males in a southern geographical location. Additionally, due to this study sample’s potential to have pre-established positive attitudes, ceiling effects may have occurred, thus, limiting the amount stigma and/or knowledge that could be improved with a psychoeducational module.

In summary, this study and these results suggest that knowledge can be improved towards stigmatized populations. Despite finding inconsistencies in reducing negative attitudes and stigma toward transgender populations with
knowledge, researchers should not let this suggest that stigma and negative attitudes cannot be improved or changed. Instead, researchers should use this research and this pilot study as a guide to improve future psychoeducational research toward transgender populations or other stigmatized populations. Additionally, psychoeducational research focusing on transgender populations that continues to emerge can impact transgender populations and the stigma they experience by providing information to advocacy organization such as Safe Zone Ally Training. This could enable research to inform advocacy programs and impact transgender stigma at a community level – overall allowing psychoeducational research to impact stigma.

**Strengths**

Strengths of the current study include aiding and leading future research as well as contributing to the current literature on LGBT Psychology. The current study is one of the few that has focused on stigma towards transgender populations with an educational module. This emphasis on transgender populations is significant, because throughout much of current and past research, individuals who identified as LGBT tended to be grouped together. It is important to make the distinction between sexual minority stigma and gender minority stigma in research on these populations.

We chose to provide information and knowledge about transgender populations in an online educational module which could be easily disseminated and accessed. Information in an educational module that is online can be reached in most places that have internet access. Therefore, an online educational module targeting
stigma can be disseminated in most schools and workplaces. Furthermore, the educational module may also be beneficial for clinicians. Practicing clinicians may have difficulty finding time to stay up-to-date with advancements or research due to everyday business activities and seeing clients. An educational module that provides all pertinent information in one location and is effortlessly accessible online can be a great resource to practicing clinicians.

To ensure that the module would not overwhelm participants with an abundance of jargon, researchers attempted to create a module that was as brief as possible, while still including all essential information. This feature allows the module to be generalizable to the public. This ensures that employers could use the module as a training device, clinicians could read through the module in a timely manner to stay current on research, and students could become educated about potential peers within reasonable time frames. Additionally, the module cannot only be made easily available for a large variety of populations but also it can be made customizable and interactive. For example, if an employer’s goals are to specifically target legislation for transgender populations, the module could be easily customized to fit those needs.

This study also targets an area of research that is largely underdeveloped due to its novelty and the lack of a fully developed field, especially when compared to other areas of psychology that have a much larger depth and breadth of research, such as depression or anxiety (Case & Stewart, 2013). This study and the educational module add to the field of transgender research by providing an efficient, cost-
effective method of disseminating information, as well as a method that has the possibility to improve negative attitudes and stigma of lay persons in communities across the nation.

Furthermore, the educational module not only delivers accurate knowledge, but also dispels widely held stereotypes. Much of the incorrect information individuals may have about transgender populations can be explained by the myths, stereotypes, or the general lack of information. Because the module offers accurate, general information that can be easily understood by lay persons, it can easily target the inaccurate myths and stereotypes one may hold, as well as provide information to fill the gaps in knowledge about transgenderism.

Lastly, this study implements multiple measures of stigma to better understand the stigma faced by transgender populations. Currently, the stigma that transgender individuals experience is still vastly unclear. To better understand this stigma, the current study incorporates general measures of stigma, as well as measures of stigma that specifically ask about attitudes toward transgender populations (See Appendix G). The use of multiple and specific measures allow researchers to better understand how the stigma that transgender populations experience is different from the stigma that other minority or underserved populations may face (i.e., mental illness populations).

Limitations

We have limitations related to the educational module. For instance, participants were only asked to view the module for 20–25 minutes, making the
viewing time and exposure to transgender information limited. This short span of
time and the passiveness of the module may have affected the amount of knowledge
acquired and the degree to which negative attitudes were decreased (Dueweke &
Bridges, 2017). If participants would have otherwise had longer to explore and
critically think about the information presented, perhaps the effect of knowledge on
stigma would have been greater. Additionally, the limited viewing time may have
affected participants’ retention of the information in the module. Because of the short
amount of time information was presented, participants may not have had enough
time to view, consider, and process the information.

Future studies with greater resources and time should examine longitudinal
designs to better understand the effects of knowledge on improving negative attitudes.
A limitation of this study was the lack of follow-up after the initial post-test
(Dueweke & Bridges, 2017, Guth et al., 2001). Although the post-test administered in
the current study allowed for an understanding of the module’s effect, a greater
analysis of the module’s effect could be made if a follow-up occurred with
participants three to four weeks after viewing the module. This would determine if the
module did indeed change attitudes long-term and if the module influenced behaviors.
Overall, a longitudinal design would allow for a better understanding of the overall
effect of an educational module and the presentation of knowledge.

The use of modified scales was also a limitation of this study. Several of the
measures used in this study were created for other constructs and adapted in the
current study to refer to transgender population. Modifying these scales may decrease
their reliability and the results. Likewise, this study implemented many outcome variable scales to better understand how stigma may be different for transgender populations when compared to other marginalized populations. However, this may be a limitation due to the number of items participants had to answer and the increased likelihood of participant fatigue. There might have been greater reliability if the study had used a fewer number of scales because the study would have taken less time, thus, decreasing the possible occurrence of participant fatigue or random answering.

**Future Directions**

The current study can be viewed as a stepping stone or a pilot study for transgender psychoeducational research. Despite the current study’s empirical nature, there are still important aspects that future research should emphasize for research to continue to improve within this area. More specifically, past research that has utilized knowledge or alternative forms of contact as an intervention technique recommend a longer follow-up period to understand the effects of attitudes and stigma in the long run (Dueweke & Bridges, 2017, Guth et al., 2001).

Future research should focus on creating specific, long-term, longitudinal interventions that use multiple methods and require increasing contact and interactive learning approaches to change negative attitudes. For instance, much of the research discussed in this study’s literature review suggests educational interventions can be helpful in improving attitudes when comparing pre-test to post-test measures. However, it is also important to consider that this research did not follow-up participants longitudinally, making it challenging to understand whether only short-
term attitude change took place. These results also suggest that education can be effective in reducing stigma toward transgender populations, as this study investigated how to reduce stigma towards this group. However, these results may be regarded as inconclusive as there was no follow-up measure for behaviors after the intervention (Case & Stewart, 2013), further suggesting the need for research in this area.

Additionally, future research should focus on what exactly is an “ideal intervention.” An ideal intervention would educate lay persons on broad transgender definitions and information while emphasizing the stigma transgender persons’ experience. Furthermore, this intervention would include interactive videos and activities that would keep a participant engaged and more likely to truly learn and crystallize the information they are presented.

Future research should also consider developing scales specifically for measuring contact with transgender populations. The current modified scale may lack reliability because it was not initially created to measure contact with transgender persons. Although creating scales is a laborious task, it is a task that may be necessary to ensure reliability and validity of constructs. Creating these tools and interventions will continue to move forward transgender research and continue to help reduce the stigma and negative attitudes that this population faces. Similar to creating a validated contact scale, if future researchers continue to measure knowledge of transgender populations, a validated scale to measure knowledge would be beneficial; this would also ensure adequate reliability for research findings.
Future research with an educational module should better identify which components of an intervention are crucial to improving negative attitudes and stigma. For example, Case and Stewart (2013) recommend continued research to distinguish what content or mechanisms are most effective within stigma interventions. For instance, the educational module can be modified by removing the “causes” section and adding additional groups to the study to better understand if specific sections are relevant to improving attitudes and stigma (e.g., dismantling studies). A study with such a design may allow for a clearer understanding of the theory of essentialism and its role in gender and sexual minority research. Furthermore, future research should focus on reducing the content of the intervention. In the current study, the educational module has a surplus of information covering all aspects of transgender populations. For future studies, it may be necessary to focus on only the most pertinent information (e.g., definitions, how to be an ally, and stigma) to have a more effective intervention.

It is important that future studies incorporate measures of social desirability or demand characteristics. Incorporating these measures would help eliminate participants who responded in a socially desired manner or in an expected manner. Implementing measures of social desirability or demand characteristics may also assist future researchers in understanding inconsistent results. For example, in this study, a social desirability measure may have helped better understand the results for the measure Attitudes toward Transgender Populations for Hypothesis 1, where both the control group and the experimental group increased in positive attitudes.
Assessing for social desirability and demand characteristics will also help future interventions differentiate between a lack of findings and a ceiling effect. In the current study, relevant demographic information was collected. Some of this demographic information included participant characteristics such as sex, political affiliation, and religious beliefs. Although this study controlled for the effect of sex in regression analyses, and findings were still statistically significant, future studies should further investigate the role of participant characteristics such as political affiliation and religious beliefs on stigma toward transgender populations. This may be significant in understanding transgender stigma, as substantial amounts of past research suggest participant characteristics, like political affiliation and religion, may lead to more positive or more negative attitudes toward transgender populations, depending on how an individual identifies (Barringer et al., 2013; Costa & Davies, 2012; Norton & Herek, 2012; Winter et al., 2008; Worthen, 2012).

Implications

This research expands upon the current available literature on LGBT populations, but more specifically on transgender populations. For instance, this pilot study is one of the first to target an intervention toward transgender stigma and also incorporate knowledge and the effect of a belief in biology on stigma toward transgender populations. The research produced by this study has also found a viable option to continue combating stigma toward transgender populations as well as other stigmatized minority populations. In turn, this will allow for not only the future of
transgender research to expand, but also for the overall field of stigma research to expand.

This research also has future implications for therapists and clinicians. A module such as the one presented in this study could be useful for therapists who are unfamiliar with transgender populations. For example, those clinicians who are unfamiliar or have little knowledge about transgender populations, but have transgender clients seeking services, may utilize a module such as this to stay up-to-date on transgender information. Furthermore, licensed psychologists who need continuing education units may find an online psychoeducational module, or a module such as this used in a conference setting, beneficial. Implementing a psychoeducational module in this way will allow practicing and licensed psychologists to stay both up-to-date and competent on transgender populations.

Additionally, this research adds to accessible information available for lay person and institutions such as public schools. Furthermore, this research allows for transgender knowledge and information to not just be available for the profession and field of psychology, but also to all individuals who may come into contact with transgender populations. For instance, this module could be beneficial for educators. This would allow for educators, who may potentially teach transgender students, to have access to information that may help them understand difficulties their students are facing. Additionally, this module, or a similar module, could be created and implemented as a new employee training module. For example, just as employees are required to take part in sexual harassment or sexual assault training modules,
businesses could also require employees to participate in informative training modules about stigmatized populations, such as transgender individuals. This research and continued research in this area will allow for the general population to become more aware and knowledgeable of transgender populations.

Conclusion

Stigma is directed toward many marginalized groups throughout the world and may be experienced by many different individuals. However, the lack of knowledge about how to reduce stigma, especially toward transgender populations, is problematic. Raising awareness and increasing knowledge about transgender populations can help dispel stereotypes and in turn, lead to a decrease in negative attitudes. It can be concluded that the psychoeducational module increased knowledge regarding transgender populations. However, this study provided limited support for the improvement in stigma and negative attitudes with the implementation of a psychoeducational module. Although these results can be disheartening, researchers should not be discouraged from continuing to explore the use of knowledge in dispelling stigma, especially in the field of LGBT Psychology. Continuing to raise awareness about this population and community will hopefully impact the entire LGBT community in a positive way by creating more tolerant and positive attitudes.
REFERENCES


Brewer, M. B. (2007) The social psychology of intergroup relations social
categorization, ingroup bias, and outgroup prejudice. In A. W. Kruglanski &
E.T. Higgins (Eds.), *Social Psychology Handbook of Basic Principles* (3rd

Brown, S. A. (2010). Implementing a brief hallucination simulation as a mental
illness stigma reduction strategy. *Community Mental Health Journal, 46*, 500–
504. doi:10.1007/s10597-009-9229-0

Brown, S. A. (2011). *Substance Use Contact Scale*. Unpublished manuscript,
Department of Psychology, University of Northern Iowa, Cedar Falls, IA.

Brown, S. A. (2012). The contribution of previous contact and personality traits to
severe mental illness stigma. *American Journal of Psychiatric Rehabilitation, 15*,

of two brief stigma reduction strategies: Filmed personal contact and
doi:10.1007/s10597-010-9309-1

attitudes towards disability and inclusion. *Journal of Intellectual and
Developmental Disability, 4*, 369–379. doi:10.1080/13668250310001616407

against transsexuals. *Journal of LGBT Youth, 10*, 140–158.
doi:10.1080/19361653.2012.718549

Case, K. A., Stewart, B., & Tittsworth, J. (2009). Transgender across the curriculum:
doi:10.1080/00986280902739446

Centers for Disease Control and Prevention. (2017, February 1). *Transgender

video-based contact to reduce stigma of mental illness: “The same or not the
same” anti-stigma program for secondary schools in Hong Kong. *Social
Science and Medicine, 68*, 1521–1526. doi:10.1016/j.socscimed.2009.02.016


Strong, S., & Arsiwalla, D. A. (2016). *Psychoeducational module to promote knowledge and reduce stigma towards recreational marijuana users.* Unpublished manuscript, Department of Psychology, University of Northern Iowa, Cedar Falls, Iowa.


APPENDIX A

DEMOGRAPHICS

Please answer the following questions.

1. Please enter your age

____

2. What is your biological sex?
   a. Male
   b. Female
   c. Intersex
   d. Not listed (please specify if you choose)

____

3. What is your gender identity?
   a. Male
   b. Female
   c. Transgender
   d. Nonbinary/fluid/gender queer
   e. Not listed (please specify if you choose)

____

4. What is your sexual orientation?
   a. Asexual
   b. Bisexual
   c. Gay or Lesbian
d. Heterosexual

e. Queer

f. Pansexual

g. Not listed (please specify if you choose)

5. Religiously I identify as

a. Christian/Non-denominational

b. Christian/Protestant (e.g. Methodist, Lutheran)

c. Catholic

d. Jewish

e. Muslim

f. Buddhist

g. Hindu

h. Not listed (please specify if you choose)

i. I do not identify as religious

6. How religious are you?

a. Very

b. Somewhat

c. A little

d. Not at all

7. How do you vote on political issues?
a. Conservative

b. Liberal

c. Independent

d. I do not vote

e. It depends on the issues

8. How political are you?

a. Very

b. Somewhat

c. A little

d. Not at all

9. Racial/Ethnic Background

a. White/Caucasian

b. African-American

c. Hispanic/Latino

d. Asian

e. Native American

f. Multiracial (please specify if you choose)

____

g. Not listed (please specify if you choose)

____
APPENDIX B

TRANSGENDER DEFINITION

What does identifying as transgender mean?

Identifying as transgender can be defined as being a person who identifies as a gender that differs from the biological sex they were assigned at birth.
APPENDIX C

TRANSGENDER CONTACT SCALE

During the last year, please indicate how often you interacted with someone you
knew (or suspected) who is transgender in each of the settings listed below, either
during the school year and/or the summer months. In those settings you have had
contact, rate your impression of that/those person(s).

1. During the last year, please indicate how often you interacted with individual(s)
who are transgender WHERE YOU LIVE? Where you live refers to those
interactions where you live (e.g., roommates, family members).

   1  2  3  4

2. During the last year, please indicate how often you interacted with individual(s)
who are transgender AT WORK? At work refers to those interactions at work (e.g.,
coworkers, supervisor, customers).

   1  2  3  4

3. During the last year, please indicate how often you interacted with individual(s)
who are transgender AT SCHOOL? At school refers to those interactions at school
(e.g., other students, instructors, staff).

   1  2  3  4

4. During the last year, please indicate how often you interacted with individual(s)
who are transgender at SOCIAL EVENTS? Social events refers to those interactions
where you spend time with friends and acquaintances.

   1  2  3  4
5. During the last year, please indicate how often you interacted with individual(s) who are transgender at **FAMILY EVENTS**? Family events refers to those interactions with family members and relatives (visiting, holidays), with the exception of those you live with.

1 2 3 4

6. During the last year, please indicate how often you interacted with individual(s) who are transgender in **THE GENERAL POPULATION**? The general population refers to those interactions where you don’t know the person well (e.g., neighbor, mailperson, grocer, stranger).

1 2 3 4
APPENDIX D

LEVEL OF FAMILIARITY SCALE

Please respond to the following statements. Select yes to indicate if you have experienced the stated situation. Select no to indicate if you have not experienced the stated situation.

1. I have watched a movie or television show in which a character depicted a transgender person. Yes   No

2. My job involves providing services for persons who are transgender. Yes   No

3. I have observed, in passing, a person I believed was transgender. Yes   No

4. I have observed transgender persons on a frequent basis. Yes   No

5. I am transgender. Yes   No

6. I have worked with a transgender individual at my place Yes   No
of employment.

7. I have never observed a person that I was aware was transgender.  Yes  No

8. A friend of the family is transgender.  Yes  No

9. I have a relative who is transgender.  Yes  No

10. I have watched a documentary on television about transgender.  Yes  No

11. I live with a person who is transgender.  Yes  No
APPENDIX E

SOCIAL DISTANCE SCALE

Please respond to the following statements. Indicate whether you would be definitely willing, probably willing, probably unwilling, or definitely unwilling to engage in the following scenarios.

1. How would you feel about renting a room in your home to someone who identifies as transgender?
   
   0 1 2 3
   Definitely willing Probably willing Probably unwilling Definitely unwilling

2. How about as a worker on the same job as a transgender individual?
   
   0 1 2 3
   Definitely willing Probably willing Probably unwilling Definitely unwilling

3. How would you feel having someone who identifies as transgender as a neighbor?
   
   0 1 2 3
   Definitely willing Probably willing Probably unwilling Definitely unwilling

4. How about as the caretaker of your children for a couple of hours?
   
   0 1 2 3
   Definitely willing Probably willing Probably unwilling Definitely unwilling

5. How about having your children marry someone who is transgender?
   
   0 1 2 3
   Definitely willing Probably willing Probably unwilling Definitely unwilling
6. How would you feel about introducing someone who identifies as transgender to a young man/woman you are friendly with?

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<th>Definitely willing</th>
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<th>Probably unwilling</th>
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<td>3</td>
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7. How would you feel about recommending a transgender for a job working for a friend of yours?

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<th>Definitely willing</th>
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<th>Definitely unwilling</th>
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APPENDIX F

AFFECTIVE REACTION SCALE

If you were to interact with someone who identifies as transgender, indicate how you would feel:

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<td>1.</td>
<td>Pessimistic</td>
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<td>2.</td>
<td>Tranquil</td>
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<td>3.</td>
<td>Supportive</td>
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<td>4.</td>
<td>Fearful</td>
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<td>5.</td>
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<td>6.</td>
<td>Disgusted</td>
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<td>7.</td>
<td>Apprehensive</td>
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<td>8.</td>
<td>Irritable</td>
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<td>9.</td>
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<td>Calm</td>
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APPENDIX G

ATTITUDES TOWARD TRANSGENDER INDIVIDUALS

Please respond to the following statements. Indicate whether you would strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, or strongly disagree to each of the following statements.

1. It would be beneficial to society to recognize transgenderism as normal.

1 2 3 4 5

Strongly agree Neither agree nor disagree Disagree

2. Transgendered individuals should not be allowed to work with children.

1 2 3 4 5

Strongly agree Neither agree nor disagree Disagree

3. Transgenderism is immoral.

1 2 3 4 5

Strongly agree Neither agree nor disagree Disagree

4. All transgendered bars should be closed down.

1 2 3 4 5

Strongly agree Neither agree nor disagree Disagree

5. Transgendered individuals are a viable part of society.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
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<tbody>
<tr>
<td>6. Transgenderism is a sin.</td>
<td>Strongly agree</td>
<td>Neither agree nor disagree</td>
<td>Disagree</td>
</tr>
<tr>
<td>7. Transgenderism endangers the institution of the family.</td>
<td>Strongly agree</td>
<td>Neither agree nor disagree</td>
<td>Disagree</td>
</tr>
<tr>
<td>8. Transgendered individuals should be accepted completely into our society.</td>
<td>Strongly agree</td>
<td>Neither agree nor disagree</td>
<td>Disagree</td>
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<tr>
<td>9. Transgendered individuals should be barred from the teaching profession.</td>
<td>Strongly agree</td>
<td>Neither agree nor disagree</td>
<td>Disagree</td>
</tr>
<tr>
<td>10. There should be no restrictions on transgenderism.</td>
<td>Strongly agree</td>
<td>Neither agree nor disagree</td>
<td>Disagree</td>
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</table>
11. I avoid transgendered individuals whenever possible.

1   2   3   4   5

Strongly agree   Neither agree nor disagree   Disagree

12. I would feel uncomfortable working closely with a transgendered individual.

1   2   3   4   5

Strongly agree   Neither agree nor disagree   Disagree

13. I would enjoy attending social functions at which transgendered individuals were present.

1   2   3   4   5

Strongly agree   Neither agree nor disagree   Disagree

14. I would feel comfortable if I learned that my neighbor was a transgendered individual.

1   2   3   4   5

Strongly agree   Neither agree nor disagree   Disagree

15. Transgendered individuals should not be allowed to crossdress in public.

1   2   3   4   5

Strongly agree   Neither agree nor disagree   Disagree

16. I would like to have friends who are transgendered individuals.
17. I would feel comfortable if I learned that my best friend was a transgendered individual.

18. I would feel uncomfortable if a close family member become romantically involved with a transgendered individual.

19. Transgendered individuals are really just closeted gays.

APPENDIX H

DEVALUATION-DISCRIMINATION SCALE

Please respond to the following statements. Indicate to what degree you either believe or do not believe the following statements.

1. I would willingly accept a transgender individual as a close friend.

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<tr>
<td>None at all</td>
<td>A moderate amount</td>
<td>A great deal</td>
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2. I would believe that a person who identifies as transgender is just as intelligent as the average person.

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<td>None at all</td>
<td>A moderate amount</td>
<td>A great deal</td>
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3. I believe that a transgender individual is just as trustworthy as the average citizen.

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<tr>
<td>None at all</td>
<td>A moderate amount</td>
<td>A great deal</td>
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4. I would accept a transgender individual as a teacher of young children in a public school.
5. I believe that being transgender is not a sign of personal failure.

6. I would not hire a transgender individual to take care of my children.

7. I think less of a person who identifies as transgender.

8. If I were an employer, I would hire someone who identifies as transgender.
9. If I were an employer, I would pass over the applicant of someone who identifies as transgender or "other" in favor of another application.

1. None at all
2. A moderate amount
3. A great deal

10. I would treat a transgender individual just as they would treat anyone.

1. None at all
2. A moderate amount
3. A great deal

11. I would be reluctant to date someone who identifies as transgender.

1. None at all
2. A moderate amount
3. A great deal

12. If I knew a person was transgender, I would take their opinions less seriously.

1. None at all
2. A moderate amount
3. A great deal
APPENDIX I

ESSENTIALISM INDEX

Please respond to the following statements. Indicate whether you would strongly agree, agree, slightly agree, slightly disagree, disagree, or strongly agree with each of the following statements.

1. The kind of person someone is can be largely attributed to their genetic inheritance.

1 2 3 4 5 6
Strongly agree

2. Very few traits that people exhibit can be traced back to their biology.

1 2 3 4 5 6
Strongly agree

3. I think that genetic predispositions have little influence on the kind of person someone is.

1 2 3 4 5 6
Strongly agree

4. Whether someone is one kind of person or another is determined by their biological make-up.

1 2 3 4 5 6
Strongly agree

5. There are different types of people and with enough scientific knowledge these different ‘types’ can be traced back to genetic causes.
6. A person's attributes are something that can't be attributed to their biology.

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<td></td>
<td>Strongly agree</td>
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7. With enough scientific knowledge, the basic qualities that a person has could be traced back to, and explained by, their biological make-up.

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8. A person's traits are never determined by their biological make-up.

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<td>Strongly agree</td>
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<td>Strongly disagree</td>
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APPENDIX J

KNOWLEDGE QUESTIONS

Please answer the following multiple choice questions by selecting a single answer.

1. Transgender refers to one's ___________.
   a. Gender Identity
   b. Sexual Orientation
   c. Genitalia
   d. Degree of femininity or masculinity

2. What would be the sexual orientation of someone who identifies as transgender?
   a. Gay
   b. Any sexual orientation
   c. Bisexual
   d. Asexual

3. Transsexual and transgender__________.
   a. Mean the same thing
   b. Mean different things
   c. Are both inappropriate terms
   d. Refer to sexual orientation

4. A female to male transgender individual is someone that ______.
   a. Was assigned the gender of female and now identifies as male
   b. Was assigned the gender of male and now identifies as female
c. Identifies as gay

d. Identifies as both male and female

5. Which of the following must be done in order to identify as transgender?
   a. Hormone treatment
   b. Surgical procedure
   c. Legally changing one's name
   d. None of the above

6. Gender dysphoria is __________.
   a. Being a tomboy
   b. When a boy is really feminine
   c. Incongruence between assigned and expressed gender
   d. Not liking the way one's genitals look

7. Please choose the following true statement.
   a. Transgender individuals are always diagnosed with gender dysphoria.
   b. Transgender individuals are never diagnosed with gender dysphoria
   c. Transgender individuals are diagnosed with gender dysphoria if symptoms cause clinical impairment.
   d. Transgender individuals cannot have gender dysphoria

8. Please choose the following true statement.
   a. All states have employment laws that protect gender identity rights.
   b. No states have employment laws that protect gender identity rights.
c. Only New York has employment laws that protect gender identity rights.

d. The majority of states, 31, do not have employment laws that protect gender identity rights.

9. Currently there are __________ that protect transgender individuals from being discriminated against in public places or places that provide public accommodations.

   a. Federal laws
   b. No federal laws
   c. No federal laws but some state laws
   d. No laws

10. Please choose the following true statement.

    a. All 50 states prohibit discrimination in schools based on gender and sexual orientation.
    b. Only California prohibits discrimination in schools based on gender and sexual orientation.
    c. Less than half of the 50 states prohibit discrimination in schools based on gender and sexual orientation.
    d. No states prohibit discrimination in schools based on gender and sexual orientation.

11. A healthcare provider can legally refuse to provide treatment to someone because of their gender identity or their identification as transgender.
a. Yes
b. Yes, but only if it is because they feel uncomfortable
c. Yes, but only if it is because they feel incompetent
d. No

12. __________, a disorder of sex development, may play a role in the cause of gender dysphoria.
   a. Androgyny
   b. Androgen Insensitivity
   c. Congenital Adrenal Hyperplasia or CAH
   d. Testosterone

13. Which of the following is a suspected cause of gender dysphoria?
   a. Exposure to chemicals
   b. Drug use
   c. Reduction in hypothalamic activation
   d. Playing with toys for the opposite gender

14. What are factor/s that may be possible links to gender dysphoria?
   a. A mother's mental illness
   b. Abnormal blood flow to certain areas of the brain
   c. Disorders of sex development
   d. All of the above are possible links to gender dysphoria but there are no known causes

15. The prevalence of transgenderism is higher among ______.
a. Women
b. Men
c. Those of lower socioeconomic status
d. Minority Populations

16. Transgender individuals are at a much higher risk for ______.
   a. Committing suicide
   b. Living in poverty
   c. Being fired for unethical reasons
   d. All of the above

17. According to the National Center for Transgender Equality, if you are unsure of someone's pronouns (he, his, him, she, her) it is recommended that you _____.
   a. Just guess
   b. Avoid using pronouns
   c. Ask the individual's friend
   d. Ask the individual

18. According to the National Center for Transgender Equality, it is recommended that you ______ a transgender individual has had sex reassignment surgery or any type of surgery that has helped them look more like the other gender
   a. Ask if
   b. Never ask if
c. Just guess if

d. Assume

19. According to the National Center for Transgender Equality, telling a transgender individual that you would have never known they were transgender is considered ________.

   a. A great compliment
   
   b. Only okay to say if you do not know the individual
   
   c. A statement you should avoid saying
   
   d. Only okay to say if you have just met the individual
APPENDIX K

ATTENTION CHECKS

For the following question please read the entire question in order to get the answer correct.

1. Most modern theories of decision making recognize the fact that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables, can greatly impact the decision process. In order to facilitate our research on decision making, we are interested in knowing certain factors about you, the decision maker. Specifically, we are interested in whether you actually take the time to read directions; if not, then some of our manipulations that rely on changes in the instructions will be ineffective. So, in order to demonstrate that you have read the instructions, please ignore the sports items listed below. Instead simply choose the option ‘click here’ and proceed to the next screen. Thank you very much.

   a. Skiing
   b. Soccer
   c. Snowboarding
   d. Running
   e. Hockey
   f. Football
   g. Swimming
   h. Tennis
i. Basketball
j. Cycling
k. Click here

2. While watching TV, have you ever had a fatal heart attack?
   a. Five times
   b. Three times
   c. Two times
   d. Never
   e. One time

3. The correct response to this question is to choose "other" and then type in "psychology" when you see a space to fill in information.
   a. Transgender populations
   b. Perceptions
   c. Stigma
   d. Attitudes
   e. Other
   _____
APPENDIX L

MANIPULATION CHECKS

1. What was this study about?

2. What subject was this study about?
   a. Transgender
   b. Homosexuality
   c. Depression
   d. Isle of Ireland

3. Do you believe you learned a lot, a little, or nothing about transgender populations after participating in this study?
   a. A lot
   b. A little
   c. Nothing

4. Do you feel as though you are more familiar with knowledge about transgender populations after participating in this study?
   a. Yes
   b. No
   c. Not sure
APPENDIX M

BIOLOGICAL EXPLANATION CHECK

1. What would be one explanation for identifying as transgender?

_________

2. Being transgender is largely attributed to one's genetic inheritance.

1  2  3  4  5  6  7
Strongly agree  Neither agree nor disagree  Strongly disagree

3. There is a biological explanation for why individuals may identify as being transgender.

1  2  3  4  5  6  7
Strongly agree  Neither agree nor disagree  Strongly disagree

4. Having a transgender identity can be traced back to genetic causes.

1  2  3  4  5  6  7
Strongly agree  Neither agree nor disagree  Strongly disagree

5. Identifying as transgender is never determined by one's biological makeup.

1  2  3  4  5  6  7
Strongly agree  Neither agree nor disagree  Strongly disagree
APPENDIX N

EDUCATIONAL MODULE

Transgender, What is it?

Overview
Gender Dysphoria
Legislation and Equal Rights
Cause
Prevalence and the Effect of Stigma
How to be an Ally
References
Contact Us

Overview

How is the term transgender defined?

The term Transgender refers to those whose: gender expression does not match their assigned gender or the gender they were born as. This is a term that is used by people who do not identify as transgender. (National Center for Transgender Equality, 2013)

The term Transsexual refers to:

Do you know how gender identity is different from sexual orientation?

Gender identity refers to one's internal sense of being more male or more female. (National Center for Transgender Equality, 2013)

Gender identity is something that cannot always be known from looking at someone. (National Center for Transgender Equality, 2013)

Sexual orientation refers to whom a person is sexually attracted to. (National Center for Transgender Equality, 2015)

Keep in mind...

It's important to understand that sometimes a diagnosis of Gender Dysphoria may be warranted for those who identify as transgender to receive hormone treatment or undergo surgical procedures for insurance purposes.

However, it is more important to know that identifying as transgender is NOT a mental illness by the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM 5) standards.

Additionally, not all those who identify as transgender are diagnosed with Gender Dysphoria. Gender Dysphoria is a term that specifically describes a deep inner sense of living in a gender different from the sex assigned at birth. It is not necessary to receive a diagnosis of Gender Dysphoria to be considered a transgender person. (National Center for Transgender Equality, 2013)
Transgender, What is it?

Legislation and Equal Rights

What are employment rights?

Employment rights protect individuals right to not be discriminated against in the workplace. (National Center for Transgender Equality, 2015)

"The following map portrays which states, those with the capital "T" (dark green), have employment laws protecting gender identity rights. There are 39 total."

This shows that there are 31 states that do NOT have employment laws that protect gender identity rights.

What are medical rights?

Medical rights protect an individual’s right to not be discriminated against in health care facilities and to ensure equal access. (National Center for Transgender Equality, 2015)

Can those who identify as transgender be denied medical services?

It is illegal for a health care provider, at anytime, to deny medical services to someone based on gender identity. (National Center for Transgender Equality, 2015)

What are education rights?

Education rights protect an individual from discrimination in educational institutions and ensure equal access to education. (National Center for Transgender Equality, 2015)

38 different states do NOT prohibit discrimination in schools based on gender and sexual orientation. (National Center for Transgender Equality, 2015)

Transgender, What is it?

Causes

Research on Gender Dysphoria and transgender populations is somewhat limited. The past research that is available however has found some genetic links.

It is important to remember that the following possible etiologies or causes discussed do NOT mean an individual will be/is diagnosed with Gender Dysphoria or will/do identify as transgender.

What are some possible factors that may lead to Gender Dysphoria?

Neurobiology

There appear to be differences in brain anatomy across those diagnosed with Gender Dysphoria compared to those who are not. (Spinnler & Jiles, 2014)

When comparing male individual’s brains diagnosed with Gender Dysphoria to female brains not diagnosed with Gender Dysphoria, males diagnosed with Gender Dysphoria appear to have brain anatomy characteristics more similar with female brains. (Spinnler & Jiles, 2014)

Disorders of Sex Development

Disorders of sex development can be defined as circumstances that affect sex organs and their development. This may include the abnormal development of genitalia or hormonal imbalances. (University of California San Francisco Benioff Children's Hospital, 2000)

An individual who has a disorder of sex development may have both male and female characteristics. (University of California San Francisco Benioff Children's Hospital, 2000)

Congenital Adrenal Hyperplasia or CAH is an example of one disorder of sex development that has been linked to nonconforming gender behaviors. (University of California San Francisco Benioff Children's Hospital, 2000)

Genetics
Transgender, What is it?

Prevalence and the Effect of Stigma

Prevalence

- Prevalence rates range from around .014% - 6% for males.
- Prevalence rates are higher among men. *Source.*
- Transgender prevalence in the population is estimated from .25-1%. *Source.*
- It is important to remember these may be underestimated. *Source.*

Stigma and Its Effect

- The stigma of identifying as transgender affects individuals’ in every aspect of their lives.
- According to the National Transgender Discrimination Report (2011), 63% of those who identify as transgender have been exposed to discrimination including discrimination of high severity.

What forms of discrimination are experienced by those who identify as transgender? *Source.*

Transgender, What is it?

How to be an Ally

According to the National Center for Transgender Equality (2015) and the Gay and Lesbian Alliance Against Defamation (2015), the following are recommended ways to respectfully be an ally:

- Transgender individuals do NOT look a certain way and it should not be assumed that someone is visibly transgender.
- Do NOT make assumptions about a transgender individual’s...
APPENDIX O

NEUTRAL VIDEO
APPENDIX P

A PRIORI ANALYSES

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**F tests - ANOVA: Repeated measures, within-between interaction**

Number of groups = 2. Number of measurements = 2. Corr among rep measures = 0.5. Nonsphericity correction $\epsilon = 1$. $\alpha$ err prob = 0.05. Effect size $f = 0.15$

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**F tests - Linear multiple regression: Fixed model, $R^2$ increase**

Number of tested predictors = 1. Total number of predictors = 3. $\alpha$ err prob = 0.05. Effect size $f^2 = 0.15$