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Prologue
Dr. Michiko Nohara-LeClair

This year's Research Methods Journal is extra special because the students who contributed their papers to it are extra special. For the first time since 2002 when I first started these journals, every contributing student was accepted to present their work featured in this journal at a research conference in April of 2020. In addition, some of these same students were accepted to present other scholarly work at one or more research conferences in the spring. Among the seven students featured in this journal, we are talking about 11 conference presentations – the most productive of any class I have ever had the privilege of teaching.

In all these years of teaching Advanced Research Methods, Psychology Research Labs, and Senior Thesis, I have never had a group of students who were collectively more enthusiastic and hardworking than this group of students. However, just as the students and I were getting prepared for their conference poster and/or paper presentations, the corona virus pandemic (COVID-19) hit the U.S. in March 2020. From that point forward, everything we took for granted had to be reevaluated and adopted to a new normal.

The sudden onset of the pandemic resulted in all academic conferences either canceling or postponing their event. Our own Social Science Student Symposium 2020 scheduled for November 2020 also had to be canceled because of the pandemic. These seven well-deserving students did not have the opportunity to showcase their scholarly achievements at academic conference in 2020 as planned.

However, all but one of these students who had already graduated in December 2019 were able to present their work at our semester-end project presentation conference, which was held virtually on Canvas Conferences for the first time. Despite the unfamiliar format, the students all rose to the occasion, showed resilience and creativity, and performed remarkably. Faculty, staff, and students from outside of the participating courses who came to hear their presentations were very impressed, and I could not be prouder.

Although our lives are still very much influenced by the current pandemic and we have had to endure our share of disappointments, I believe that the students whose work is represented in this journal will turn their hardship into strength as they move forward, and I do expect them to continue to achieve great things in their futures.

Lastly, in addition to thanking the student authors in this journal for sharing their work, I would like to thank Isabella Boccia for designing this year's journal cover and Alfa Ramirez for serving as editor for this journal.

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Associations between Personality Traits and Music Preference

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Purpose: *The purpose of this study was to examine potential associations between an individual's personality traits in reference to the Big Five, and their music preference and enjoyment.* ***Method:*** *This study consisted of 175 participants who each completed an online survey intended to measure both their personality traits and music they enjoyed. Participants would read various statements referencing each of the Big Five personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. They would then respond to how much they agreed or disagreed with the statements presented. Additionally, participants would listen to short 15-s audio clips of various songs with the music genres of: rock, rap, country, pop, electronic, new age and classical represented. After listening to these audio clips, participants would rate the degree to which they enjoyed the song.* ***Results:*** *The results revealed that individuals who scored high in Openness, Extraversion, or Agreeableness enjoyed more genres of music than those scoring low in these areas. Additionally, those scoring low in Neuroticism enjoyed more genres of music. People who scored high and low for Conscientiousness showed no difference in enjoyment.* ***Discussion:*** *Future research in this field could strengthen the idea that personality traits are associated with an individual's music preference. Additional factors such as an individual's age, race, cultural background, or other aspects of personality may also be beneficial to take into account due to the data not supporting all hypotheses.*

Keywords: Big Five, personality traits, music genres, music preference, music enjoyment

When it comes to music preference, it can be noted that an individual's personality traits may be linked to the types of music they prefer and enjoy. Additionally, there are many different tools and methods that can be used to measure an individual's personality. The present research solely focused on addressing personality with regard to the Big Five personality traits. The Big Five personality traits, created by McCrae and Costa (as cited in Waude, 2017), serve as a resource for explaining different aspects of human behavior in terms of how individuals express personality characteristics. The five traits specifically addressed can be represented in the acronym OCEAN: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism

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(Waude, 2017). Since all individuals are unique, there are some limitations to only presenting

five aspects of an individual's personality; however, it does provide a foundation for addressing

these specific areas of personality. These personality traits can contribute to and serve as a guide

for many different aspects of behavior and functioning.

A study conducted by Ali (2019) observed the impact of personality traits on human

behavior and found that the way participants perceived their life in terms of satisfaction as well

as how innovative they were was positively impacted by Extraversion, Agreeableness,

Conscientiousness, and Openness. Because human behavior and personality traits are complex

and consist of many different factors, even something as small as music preference can

potentially be associated with it. Similar results of music in relation to personality were found in

another study conducted by Pellerone et al. (2018). By studying personality traits, music genre

preference, attitudes, and beliefs about lifestyles and other activities associated with an

individual's spare time, it was found that individuals taking part in the study believed that the

types of music they favored showed information not only about themselves, but also about the

personalities of those around them (Pellerone et al., 2018).

Building off of this concept, Pearson and Dollinger (2004) further examined relationships

between personality and music preference by utilizing the Myers Briggs Type Indicator (MBTI),

(Myers et al., 1998), and the Music Preference Scale (MPS), (Litle & Zuckerman, 1986). The

MBTI is a self-reporting tool used to measure personality type and covers the topics of

Extraversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perception (Myers

et al. as cited in Pearson & Dollinger, 2004). Extraversion is the way in which individuals'

cognitive functions are more externalized whereas introversion is more internalized (Furnham et

al., 2003). In terms of Sensing-Intuition, sensing individuals think in terms of practicality and

essentially view the arts as luxuries that offer temporary enjoyment (Pearson & Dollinger, 2004).

Intuitive individuals on the other hand, seem to have a different approach with a broader scope

where the arts should be both enjoyed and appreciated due to its complex nature and the ability

to bring about both pleasure and curiosity (Pearson & Dollinger, 2004). Thinking and feeling can

be addressed in a head versus heart argument; thinking deals with individuals who assess

situations based on logic while feeling individuals focus on emotions and their value (Furnham et

al., 2003). Lastly, Judging-Perception is both associated with the way individuals process and

then evaluate information; perception is just the gathering of information whereas judging is

taking that information and then evaluating it (Furnham et al., 2003).

The MPS on the other hand, measures music experience and preference ratings (Pearson

& Dollinger, 2004). Individuals completed both the MBTI and the MPS, and individuals in the

Extraversion-Introversion segment who scored high in Extraversion preferred pop or rock music

while also having an overall music enjoyment, and those who scored high on Thinking-Feeling

segment preferred country music (Pearson & Dollinger, 2004). An additional study carried out

by Rawlings and Ciancarelli (1997) also used the MPS as well as a revised version of the

Neuroticism, Openness and Extraversion Personality Inventory. Similarly, Extraversion and

Openness were associated with the greatest number of music genre preferences, and participants

who were more open enjoyed a variety of music (Rawlings & Ciancarelli, 1997). In contrast to

this, extraverted people generally scored high on the MPS in preferring popular music (Rawlings

& Ciancarelli, 1997).

Research conducted by Chamorro-Premuzic et al. (2010) examined the relationship

between the Big Five personality traits as well as individuals' use and motivations for music

listening. Individuals listened to different genres of music and answered questions intended to

measure personality traits (Chamorro-Premuzic et al., 2010). To understand this relationship,

Structural Equation Modeling, which uses equations to measure how variables are structured as

well as their interactions, was used to evaluate which personality traits predict uses of music;

these predictions would then be used to predict overall music preferences (Chamorro-Premuzic

et al., 2010; Tarka, 2017). The personality traits of emotional stability, extraversion, openness,

and trait emotional intelligence were specifically addressed (Chamorro-Premuzic et al., 2010).

With the addition of differences in age and gender, all traits examined in the study were found to

show relationships with music preferences and music use (Chamorro-Premuzic et al., 2010).

With reference to extraversion and openness, Chamorro et al. (2010) found positive

relationships; extraversion was positively correlated with music being used by individuals in the

background while engaging in other tasks, while openness was positively correlated with using

music in a way that was associated with stimulating the mind in some way. In specific reference

to emotional stability and trait emotional intelligence, negative correlations were found in terms

of individuals using music as a means to manage both their emotions and mood (Chamorro-

Premuzic et al., 2010).

In terms of longitudinal design, Delsing et al. (2008) followed Dutch adolescents over a

three-year time period to observe how stable their music preferences were and if there would be

any change in their preference over time. Participants were asked to complete the Musical

Preference Questionnaire and rate words referencing the Big Five based on how much they

applied to them (Delsing et al., 2008). This questionnaire consisted of 11 categories of

contemporary music that would be familiar to them, and a 5-point Likert scale was used to

measure their preference of the genres presented (Delsing et al., 2008). Responses to the

questionnaire and the rated words regarding personality were recorded and measured during the

three-year period (Delsing et al., 2008). In terms of stability over time, they found little changes

in preference during adolescent years, and even more stability once those individuals aged

(Delsing et al., 2008). They also found Openness and rock to be positively correlated as opposed

to finding negative relationships between rock and the personality traits of Conscientiousness

and Extraversion (Delsing et al., 2008). Agreeableness in addition to both Conscientiousness and

Openness were positively correlated with Elite music whereas Emotional stability showed a

negative relationship (Delsing et al., 2008). Additionally, both Extraversion and Agreeableness

shared a positive relationship with urban, pop and dance music (Delsing et al., 2008).

When observing dimensions of personality, Nave et al. (2018), conducted a study similar

in some ways to the present study discussed here. The International Personality Item Pool which

measures the five-factor model, otherwise known as the Big Five, was used to address

personality, and the dimensions of music model that consisted of: mellow, unpretentious,

sophisticated, intense and contemporary, was used to categorize specific genres (Nave et al.,

2018). They found that when participants were exposed to 15-s audio clips, there were individual

differences in personality based on the music alone, that had nothing to do with the artist or the

genre (Nave et al., 2018). Additionally, they found that both Openness and Extraversion showed

an association with specific musical preference (Nave et al., 2018). Openness was associated

with sophisticated music, or music that is inspires the listener, and is both complex and lively in

terms of its elements, while extraversion was associated with unpretentious music that is

described as relaxed, contains acoustic notes and is more straightforward (Nave et al., 2018).

Past and current research continues to build on this topic and observe additional factors of

personality that can be associated with an individual's music preference and enjoyment.

The purpose of the present study was to observe the potential relationship between an individual's personality traits, specifically referencing the Big Five, and the types of music they prefer and enjoy. I hypothesized that an individual's personality traits would be related to their preference and enjoyment of different genres and that certain personality traits would be associated with a preference and enjoyment of more genres than others. More specifically, I predicted that individuals who scored high in Openness, Extraversion or Agreeableness would enjoy and prefer more genres of music. I also predicted that those scoring low in Neuroticism would enjoy and prefer more genres of music. Lastly in-regards-to personality traits, I hypothesized that in terms of high and low scores for Conscientiousness, there would be no difference in enjoyment of genres.

In-regards-to specific music genre enjoyment, I hypothesized that individuals who scored high in Extraversion, Openness and Agreeableness would prefer music genres that were considered to be more upbeat. Upbeat music was operationally defined as music considered to produce feelings of excitement or happiness in the listener with many beats and rhythms, which included rock, rap, country, pop, and electronic genres. Whereas, individuals scoring low in these traits were predicted to prefer more mellow music. Mellow music was defined as music producing more relaxed feelings in the listener, while containing less beats and rhythms. New age and classical genres were included in this category. Individuals scoring high in Conscientiousness and Neuroticism were predicted to prefer more mellow music as opposed to upbeat music, and those scoring low in these traits were predicted to prefer both upbeat and mellow music.

Both qualitative and quantitative data were collected using an online survey. Individuals responded to various survey questions presented on a 4-point Likert scale that addressed each of

the Big Five traits and listened to short 15-s audio clips of various songs from the music genres

of rock, rap, country, pop, electronic, new age and classical. Additionally, individuals answered

five short free response questions, corresponding with each of the Big Five traits, and were

encouraged to respond to the situation presented in the free response.

Method

Participants

Prior to data collection, this study met ethical standards evaluated by the Lindenwood

Institutional Review Board and the Psychology Program Scientific Review Committee.

Participants were recruited through various social media platforms including Facebook,

Instagram, and Snapchat. Additionally, they were recruited through both the Lindenwood

Participant Pool (LPP), which allows students of various majors to take part in research studies,

and through the International Honor Society in Psychology (Psi Chi)'s research website. All

participants were required to be at least 18 years of age and must have been able to read English.

If participants did not meet this criterion, their data were excluded from the study. Participants

with access to these various social media platforms or websites would be able to find a

recruitment script containing the electronic link to the study. Because this was an online survey,

participants had the ability to take it whenever they had the time. In-regards-to compensation,

participants that were not involved with the LPP received no compensation, while those involved

with the LPP received one or two points for their participation in the study. Prior to March 16, all

individuals that were involved with the LPP received one point for their participation, however

after this date, all in-person studies were eliminated due to the outbreak of COVID-19. To serve

as compensation for this removal of in-person studies, all participants affiliated with the LPP

received two bonus points as opposed to the previous one point.

The intended sample size for this study was around 150-200 participants, consisting of individuals from different nationalities and age groups. In total, 175 individuals participated in this study. This sample size was mainly comprised of women, with men making up only 18.9% of the sample. In-regards-to age, the sample size was relatively young ($M = 29.86$, $SD = 15.8$). Additionally, individuals that were born in the United States made up 57.7% of the sample, while the remaining 42.3% of individuals were born in various countries. Individuals currently residing in the United States made up 64% of the sample, with the remaining 36% residing in other countries.

Materials

Due to the sample not being restrictive, an online survey appeared to be the strongest option in terms of gathering data from many different individuals (see Appendix A). A participant recruitment script (see Appendix B) was posted on various social media platforms as well as on Sona Systems for the LPP and on the Psi Chi website. Participants taking this survey needed to have an electronic device to gain access to the survey whether that be a tablet, computer, or mobile phone. Additionally, participants may have needed headphones, if in a public place, to listen to the audio portion of the survey.

Prior to answering questions, an informed consent statement was attached at the beginning of the survey, followed by a few general demographic questions, and a debriefing statement at the conclusion of the study. If participants did not consent to engage in the study, they were redirected out of the survey and did not have to answer any further questions. The content of this survey included both questions regarding personality type, specifically in reference to the Big Five personality traits, as well as questions concerning enjoyment of certain music genres.

For questions regarding personality type, participants were presented with seven

questions: one question being a free response for the participant to read a short passage about a

specific situation and respond, and the remaining six were various statements created to gauge

the participant's personality type. The responses to these statements were presented on a 4-point

Likert scale ranging from strongly agree to strongly disagree. For the section of the survey

pertaining to music preference and enjoyment, the participant was presented with fourteen 15-s

audio clips consisting of various music genres. These samples were chosen randomly and were

made up of two songs for each music genre: rock, rap, country, pop, electronic, new age and

classical (see Table 1). Responses were also measured using a similar 4-point Likert scale. After

these questions, one final question addressed the participant's favorite genre of music from those

chosen and mentioned above in order to find out which genre(s) the participant's preferred; this

question was not scored or used in data analysis.

Measures

All survey questions were measured in similar ways to ensure that data collection

remained consistent and easy to follow. For survey questions dealing with Openness,

Conscientiousness, Extraversion, Agreeableness, and Neuroticism, a 4-point Likert scale was

used to gauge a participant's response to the statement. There were six statements presented for

each of the Big Five traits as well as one free response question to allow for the participant to

express personal opinion rather than having to choose from already assigned answers.

When measuring participants' responses for the six questions regarding personality traits,

each question was scored on a 4-point scale. Each category of the Big Five traits had seven

questions, with a maximum of 28 points. Each of the personality traits was scored independently

of the others, and the sum of all responses was used in analysis, so individuals scoring between

7-17 points were considered to be "low" in that personality trait and those scoring between 18-28 were considered to be "high" in that specific trait.

Free response questions were scored by me on a similar 4-point scale developed for content analysis (see Appendix C). This coding system was separated into five categories representing Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Individuals would be presented with a short narrative in which they would have to respond by stating what they would do in that situation. Individual's responses were measured on a 4-point scale that addressed the degree to which they responded to the situation. Additionally, the detail given in their response would impact their score. Responses for the coding system were created to mimic what a 1- 4-point free response answer would look like. A score of 1 would indicate that they did not embody that specific personality trait whereas a score of 4 would indicate they truly embodied the trait. These free response questions were included in the 28-point total.

For the music enjoyment questions, each genre question was also paired with a 4-point response. After listening to the short audio clip, participants would rate on a 1-4 scale how much they enjoyed the audio. Upbeat and mellow categories of music were not separately grouped into categories; rather, specific songs were all categorized into one scoring system. A score of 1 would indicate that the participant did not enjoy the audio at all, whereas a score of 4 would indicate that they highly enjoyed it. For music genres, all scores were factored in together to produce a maximum score of 56. Individuals scoring between a 14-35 were considered to score "low" and prefer fewer genres than individuals scoring high from a 36-56, who preferred more genres. Furthermore, when referencing an individual's enjoyment for certain genres, an additional scale was used for each of the seven genres. Since each genre had two songs totaling

eight points, individuals scoring between 2-4 were considered to not prefer or enjoy that genre whereas those scoring between 5-8 did prefer that genre.

Analysis

Originally, a series of independent *t*-tests were to be conducted to evaluate the relationship between overall and specific music enjoyment with personality trait scores, however, due to the nature of the data and the uneven amount of high and low scores for participants, correlational analyses were performed instead. Two Pearson's *r* correlational analyses were used to evaluate the relationship between personality traits and music enjoyment and preference. Measures of Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism were correlated with the scores on overall as well as specific music enjoyment. Data from one individual were excluded from the study due to not responding to all questions regarding music preference. Data for overall music enjoyment (in Table 2) and for specific music enjoyment (in Table 3) can also be found.

Big Five Personality Traits and Overall Music Enjoyment

The first analysis performed dealt with each of the scores for the Big Five personality traits in relation to overall music enjoyment. I hypothesized that for the personality traits of Openness, Extraversion or Agreeableness, individuals would enjoy and prefer more genres of music and that those scoring low in Neuroticism would also enjoy and prefer more genres of music. Additionally, in terms of high and low scores for Conscientiousness, I hypothesized that there would be no difference in enjoyment of genres. For the personality trait of Openness, there was a significant positive correlation with overall music enjoyment, $r(173) = .169$, $p = .013$, which is consistent with the predicted hypothesis. For the personality trait of Conscientiousness, there was no significant relationship with overall music enjoyment, $r(173) = .061$, $p = .212$;

results from this were consistent with the projected hypothesis. For the personality trait of

Extraversion, there was also a significant positive correlation with overall music enjoyment as

predicted, $r(173) = .275$, $p < .001$. For Agreeableness, there was also a significant positive

correlation with overall music enjoyment, also consist with the projected hypothesis, $r(173) =$

.233, $p = .001$. Lastly, for the personality trait of Neuroticism, there was a significant negative

correlation with overall music enjoyment, as predicted by the projected hypothesis, $r(173) = -$

.186, $p = .007$.

Big Five Personality Traits and Specific Music Enjoyment

Regarding the association between personality traits and specific genre enjoyment,

another correlational analysis was done. For the personality trait of Openness, I predicted that

individuals who scored high would prefer more upbeat genres than mellow genres: rock, rap,

country, pop and electronic. I found that there was only one significant positive correlation

shared between Openness and rap music $r(173) = .237$, $p = .001$, which was predicted. Contrary

to my hypothesis, there were no significant relationships between Openness and rock, $r(173) =$

.006, $p = .466$, country $r(173) = -.094$, $p = .109$, pop, $r(173) = -.008$, $p = .456$, or electronic,

$r(173) = .091$, $p = .116$. Additionally, more open individuals were predicted to not enjoy

classical music due to its mellow nature. However, the data showed this hypothesis to be

incorrect; rather, there was a significant positive relationship between Openness and classical

music, $r(173) = .209$, $p = .003$.

For the personality trait of Extraversion, my prediction was the same as that for

Openness. I found that out of these five genres, only three of them (country, pop and electronic)

yielded results consistent with my hypothesis. There was a significant positive relationship

between Extraversion and country, $r(173) = .267$, $p < .001$, pop, $r(173) = .201$, $p = .004$, and

electronic music genres, $r(173) = .184$, $p = .007$. However, there was no statistically significant relationship between Extraversion and both rock, $r(173) = .097$, $p = .100$, and rap, $r(173) = .107$, $p = .079$.

In terms of the personality trait of Agreeableness, I hypothesized the same as that for both Openness and Extraversion. Similar to the results from the trait of Extraversion, only three out of the five upbeat genres showed patterns that were consistent with my hypothesis. There was a significant relationship between Agreeableness and rap, $r(173) = .256$, $p < .001$, country, $r(173) = .181$, $p = .008$, and pop genres, $r(173) = .295$, $p < .001$. Additionally, there was no significant relationship between Agreeableness and rock, $r(173) = .037$, $p = .312$. However, for the electronic genre, $r(173) = .123$, $p = .052$, the relationship was approaching statistical significance. While there were negative correlations between Agreeableness and the mellow genres, the relationship between both new age music, $r(173) = -.036$, $p = .316$, and classical genres, $r(173) = -.070$, $p = .180$, were not statistically significant.

In terms of Conscientiousness, I predicted that individuals scoring high in this area would prefer more mellow music (new age and classical), as opposed to upbeat. The only significant relationship was with country music, $r(173) = .143$, $p = .029$, which is inconsistent with the projected hypothesis. Both new age, $r(173) = .047$, $p = .267$ and classical genres, $r(173) = .036$ $p = .320$, however, did not correlate with Conscientiousness. Lastly, for the personality trait of Neuroticism, similar to Conscientiousness, I predicted that individuals scoring high in Neuroticism would prefer more mellow genres as well. However, my results indicated the opposite to be true. There were significant negative relationships with Neuroticism and new age music, $r(173) = -.180$, $p = .008$ and with classical music, $r(173) = -.201$, $p = .004$.

Lastly, the final question that requested participants to select their favorite genres out of the list was not included in the data analysis, however, out of all possible genres, the top three most preferred were pop, rock, and rap. A total of 130 participants preferred pop music, 91 participants preferred rock, and 82 participants preferred rap music.

Discussion

Multiple significant relationships were found between personality traits and overall music enjoyment. As hypothesized, there were significant positive correlations between the enjoyment of more genres by individuals scoring high in Openness, Extraversion or Agreeableness, as well as for individuals scoring low in Neuroticism. I also found that individuals who scored high or low in Conscientiousness showed no difference in music enjoyment which was hypothesized. However, interesting data resulted from analyses conducted to establish relationships between personality traits and specific music enjoyment. Many hypotheses were challenged, including the relationship between upbeat music and the personality traits of Openness, Extraversion and Agreeableness. It was not the case that individuals scoring high in these areas would prefer the more upbeat genres and additionally not the case that those scoring high in Conscientiousness and Neuroticism would prefer the more mellow genres.

There may be explanations as to why these results may have differed from the projected hypotheses. Possible explanations for this may be due to other factors outside of the Big Five personality traits. Other aspects of an individual's personality may likely be associated with their music preference and enjoyment, and therefore produce different results. Additionally, an individual's birthplace, current place of residence, and the individuals they surround themselves with may strongly correlate to their music preference; this was not analyzed in the current study. Limitations in this research arise from the fact that these demographic areas were not specifically

addressed and correlated with music enjoyment. If specific demographic factors were taken into

account and analyzed, this could potentially be associated with different outcomes that further

support or deny my hypotheses. Additionally, due to the age range of participants in the study

with most of them in middle adulthood, results were very limited in that way. Age and music

preference can potentially show significant correlations due to the fact that music does continue

to develop and change over time. If the relationship between age and music preference were

evaluated, this may lead to significant results in preference of music over the lifespan. Another

potential explanation for the data being different from the projected hypotheses may have been

due to the songs chosen for the music enjoyment section. In choosing songs to represent the

various genres, there were no guidelines followed in terms of what songs were chosen. Due to

this, I chose songs that I felt fit into the specific genre category; some of these songs may have

been very familiar to the participant, and rather than not preferring the genre as a whole, they

may have just not preferred the song due to repeated exposure.

Another noteworthy result that differed strongly from the projected hypotheses was that

of neuroticism and music preference, specifically in reference to new age and classical genres.

While I predicted that individuals scoring high in neuroticism would prefer more mellow music,

this proved to be the exact opposite. Reasons for these results may include the fact that the more

neurotic traits an individual presents, the more they may prefer to listen to many different genres

of music to match their personality, rather than combat it with more mellow, relaxing music.

Another potential explanation could be due to the fact that their music choice can in turn

influence their anxious personality by constantly being reinforced.

In the future it may be beneficial to take these factors into account and evaluate any

differences that may arise from observing them. However, in terms of the relationship between

personality traits and music preference alone, additional research in this area can further the idea

that personality can show a potential relationship between an individual's music preference and

enjoyment.

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Table 1

Music Genres and Specific Songs Used in My Study

Upbeat/ Mellow	Genre	Artist/Composer	Song	Year
Upbeat	Rock	Guns N' Roses	14 Years	1991
		Lynyrd Skynyrd	Double Trouble	1976
Upbeat	Pop	Chris Brown	YEAH 3X	2010
		Harry Styles	Lights Up	2019
Upbeat	Country	Diamond Rio	Meet in the Middle	1991
		Keith Urban	Blue Ain't Your Color	2016
Upbeat	Rap	Lil Baby	Woah	2019
		Travis Scott	HIGHEST IN THE ROOM	2019
Upbeat	Electronic	Hook N Sling	Turning Me On	2018
		PNAU	Go Bang	2017
Mellow	New Age	Steven Halpern & Georgia Kelly	Sand Dance	1995
		Reiki Healing Music Ensemble	To the Moon and Back	2010
Mellow	Classical	Alessio Bax	Lyric Pieces, Book 5, Op. 54 Nocturne	2016
		Evgeny Kissin	Liebestraum No. 3	1992

Table 2

Big Five Personality Traits and Overall Music Enjoyment

		TOTAL MUSIC SCORE
OPENNESS	Pearson Correlation	.169*
	Sig. (1-tailed)	.013
	N	175
CONSCIENTIOUS.	Pearson Correlation	.061
	Sig. (1-tailed)	.212
	N	175
EXTRAVERSION	Pearson Correlation	.275**
	Sig. (1-tailed)	.000
	N	175
AGREEABLENESS	Pearson Correlation	.233**
	Sig. (1-tailed)	.001
	N	175
NEUROTICISM	Pearson Correlation	-.186**
	Sig. (1-tailed)	.007
	N	175

* Correlation is significant at the .05 level (1-tailed).
** Correlation is significant at the .01 level (1-tailed).

Table 3

Big Five Personality Traits and Specific Music Enjoyment

		ROCK	RAP	COUNTRY	POP	ELECTRON.	NEW AGE	CLASSIC.
Openness	Pearson Correlation	.006	.237**	-.094	-.008	.091	.075	.209**
	Sig. (1-tailed)	.466	.001	.109	.456	.116	.163	.003
	N	175	175	175	175	175	175	175
Conscientiousness	Pearson Correlation	-.092	.022	.143*	.066	-.032	.047	.036
	Sig. (1-tailed)	.114	.385	.029	.195	.337	.267	.320
	N	175	175	175	175	175	175	175
Extraversion	Pearson Correlation	.097	.107	.267**	.201**	.184**	.007	.029
	Sig. (1-tailed)	.100	.079	.000	.004	.007	.465	.352
	N	175	175	175	175	175	175	175
Agreeableness	Pearson Correlation	.037	.256**	.181**	.295**	.123	-.036	-.070
	Sig. (1-tailed)	.312	.000	.008	.000	.052	.316	.180
	N	175	175	175	175	175	175	175
Neuroticism	Pearson Correlation	-.050	.001	-.068	.011	-.085	-.180**	-.201**
	Sig. (1-tailed)	.256	.497	.184	.444	.131	.008	.004
	N	175	175	175	175	175	175	175

* Correlation is significant at the .05 level (1-tailed).
** Correlation is significant at the .01 level (1-tailed).

Appendix A

Online Survey

STOP! Collaborate and Listen-Associations between Personality Traits and Music Preference

Survey Flow
Standard: Informed Consent (1 Question)
Standard: Demographic Questions (4 Questions)
Standard: Personality Questions (40 Questions)
Standard: Now you will be asked to listen to short video clips of various song genres. (15 Questions)
Standard: Debriefing Statement (1 Question)
Page Break
Start of Block: Informed Consent

Q1 You are being asked to participate in a survey conducted by Isabella Boccia at Lindenwood University. I am doing this study to observe potential associations between personality traits and music preference. Questions regarding personality traits as well as music enjoyment will be asked. Additionally, you will be asked to listen to short 15-second audio clips of various music genres. It will take about 15 minutes to complete this survey.

Your participation is voluntary. You may choose not to participate or withdraw at any time by simply not completing the survey or closing the browser window.

There are no risks from participating in this project. I will not collect any information that may identify you. There are no direct benefits for you participating in this study.

If you are a part of the Lindenwood Participant Pool (LPP) you will receive TWO extra credit point in the course for which you signed up for the LPP. You will receive extra credit simply for completing this information sheet. You are free to withdraw your participation at any time without penalty.

Participants who are not part of the LPP will receive no compensation beyond the possible benefits listed above. However, your participation is an opportunity to contribute to psychological science.

WHO CAN I CONTACT WITH QUESTIONS? If you have concerns or complaints about this project, please use the following contact information:
Isabella Boccia ipb674@lindenwood.edu
Michiko Nohara-LeClairmnohara-leclair@lindenwood.edu

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact:
Michael Leary (Director - Institutional Review Board) at 636-949-4730 or
mleary@lindenwood.edu.

By clicking the link below, I confirm that I have read this form and decided that I will participate in the project described above. I understand the purpose of the study, what I will be required to do, and the risks involved. I understand that I can discontinue participation at any time by closing the survey browser. My consent also indicates that I am at least 18 years of age.
You can withdraw from this study at any time by simply closing the browser window. Please feel free to print a copy of this information sheet.

Due to the nature of this survey involving audio clips, headphones may be needed to complete particular questions on the survey. If you prefer not to use headphones, finding a private setting would be adequate.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

- I consent, begin the study (1)
- I do not consent, I do not wish to participate (2)

End of Block: Informed Consent
Start of Block: Demographic Questions
Q2 How do you identify?

- Male (1)
- Female (2)
- Other (3) _____

Q3 How old are you?

_____

Q4 What country do you now reside in?

_____

Q5 What country were you born in?

_____

End of Block: Demographic Questions

Start of Block: Personality Questions

Q6 Pretend you are a college student. One day in class, your professor tells you about an opportunity to study abroad (take classes in another country). The study abroad program includes 4 months of learning about the culture, food and history of that country. She tells you that the school is paying for the entire trip for each person and that money is not an issue for you to worry about. However, you would essentially be moving away for 4 months and would have to experience a completely new culture. Would you go on the trip, and why/why not?

- Yes (42)
- No (43)

Q7 Why/why not?

_____

Page Break

Q8 I consider myself to be creative/have an imagination.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q9 I like to be challenged.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q10 I am open to trying new things. (New things may include but are not limited to: new foods, traveling to new places, etc.).

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q11 I consider myself to be skeptical about things.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q12 Change does not bother me.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q13 I consider myself to be adventurous.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Page Break

Q14 Pretend you are a college student. You are given an assignment in your class and that assignment is a 5-page paper on a topic of your choice. Your paper is due in two weeks. Would you start the paper immediately or would you wait, and why/why not?

- Yes (23)
- No (24)

Q15 Why/why not?

_____

Q16 I like to plan ahead.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q17 I need structure/schedule in my life.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q18 I pay attention to details.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q19 When I make certain decisions, I think about how they may impact someone else.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q20 Deadlines do not affect me. I take my time to complete tasks.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q21 I am organized.

- Strongly agree (1)

- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q22 You look out your window one day and notice a new family moving into the house next door. Would you introduce yourself, and why/why not?

- Yes (18)
- No (19)

Q23 Why/why not?

_____

Q24 I am a conversation-starter.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q25 I like to meet new people.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q26 Making new friends is easy for me.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q27 I enjoy being around others.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q28 I like being the center of attention.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q29 I enjoy being by myself.

- Strongly agree (1)
- Agree (2)

- Disagree (3)
- Strongly disagree (4)

Q30 You are at the grocery store one day and the person in front of you leaves a bag in the store. The grocery store clerk asks you to take the bag and run it out to the person. Would you go after them, and why/why not?

- Yes (25)
- No (28)

Q31 Why/why not?

_____

Q32 I enjoy making other people happy.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q33 Other people's lives interest me.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q34 I care about how others feel.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q35 If I see someone is feeling down, I would try to cheer them up.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q36 If I see someone who needs help, I would go out of my way to help them.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q37 I can cooperate with people.

- Strongly agree (1)
- Agree (2)

- Disagree (3)
- Strongly disagree (4)

Q38 You are about to go to bed and have the next 2 days off from work when you get a phone call from your manager. They tell you that they got food poisoning and ask you if you will take their shift for them in the morning. However, you have to take on the role as the manager. Would you cover for them, and why/why not?

- Yes (25)
- No (26)

Q39 Why/why not?

_____

Q40 I tend to experience high levels of stress. (High levels of stress= stress that interferes with your daily life).

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q41 My mood is stable. I rarely experience mood swings. (Mood swings= dramatic changes in your mood that happen out of nowhere).

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q42 I tend to get upset easily.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q43 I consider myself to be relaxed.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q44 I tend to get anxious/often worry about things.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

Q45 I often feel sad or depressed.

- Strongly agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)

End of Block: Personality Questions
Start of Block: Now you will be asked to listen to short video clips of various song genres.

Q46

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q47

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q48

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q49

 How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q50

 How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)

- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q51

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q52

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q53

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q54

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q55

How much do you enjoy this music genre?

- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q56

How much do you enjoy this music genre?
- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q57

How much do you enjoy this music genre?
- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q58

How much do you enjoy this music genre?
- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q59

How much do you enjoy this music genre?
- Like a great deal (1)
- Like somewhat (2)
- Dislike somewhat (3)
- Dislike a great deal (4)

Page Break

Q60 What genres do you prefer out of these options? (Select all that apply)
1. Rap (1)
2. Country (2)
3. New Age (Calming music that often has nature noises) (3)
4. Pop (4)
5. Rock (5)
6. Electronic (6)
7. Classical (7)

End of Block: Now you will be asked to listen to short video clips of various song genres.
Start of Block: Debriefing Statement

Q61 Thank you for taking the time to participate in this survey! This study aimed to observe potential associations between an individual's personality type and their music preference.

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If you have any further questions or concerns, please do not hesitate to contact the Principal Investigator of this study. Once again, thank you for taking part in this scientific research!

Contact Information:

Isabella Boccia

ipb674@lindenwood.edu

End of Block: Debriefing Statement

Appendix B

Participant Recruitment Script

Appendix C

Coding Guide for Free Response Questions

Openness: Pretend you are a college student. One day in class, your professor tells you about an opportunity to study abroad (take classes in another country). The study abroad program includes 4 months of learning about the culture, food and history of that country. She tells you that the school is paying for the entire trip for each person and that money is not an issue for you to worry about. However, you would essentially be moving away for 4 months and would have to experience a completely new culture. Would you go on the trip, and why/why not?

Examples of Valid Responses

A score of **1**: I would not go on the trip because I would be too nervous/I don't like new things/ I would be uncomfortable...etc.

A score of **2**: I might think about it for a minute, but I would not end up going on the trip because I would rather be in a familiar place...etc.

A score of **3**: I would probably go on the trip because I like to sometimes go out of my comfort zone.

A score of **4**: I would definitely go on the trip because it sounds like a great opportunity and I love experiencing new people/places/things/food...etc.

Conscientiousness Pretend you are a college student. You are given an assignment in your class and that assignment is a 5-page paper on a topic of your choice. Your paper is due in two weeks. Would you start the paper immediately or would you wait, and why/why not?

Examples of Valid Responses

A score of **1**: I would wait until the last minute to write the paper and not even look at it until close to when its due because I procrastinate...I would not write the paper at all...etc.

A score of **2**: I would probably look at the paper and read the directions but wait to start it until later...I might turn the paper in late/not necessarily pay attention to the deadline...etc.

A score of **3**: I would probably read the directions and turn in the paper before it's due, but I would not necessarily make an outline or start the paper right away

A score of **4**: I would read the directions after getting the assignment and then start planning out what I want to write about by either making an outline or just starting to write it. (If they mention details about making outlines, preparing, paying attention to details, enjoys deadlines, etc.)

Extraversion You look out your window one day and notice a new family moving into the house next door. Would you introduce yourself, and why/why not?

Examples of Valid Responses

A score of **1**: I would not introduce myself because I am shy and it is hard for me to start conversations...I don't like to start conversations...I would rather stay inside

A score of **2**: I might consider introducing myself but I probably would not end up doing it because I would rather not...etc.

A score of **3**: I would introduce myself but because it's the right thing to do...I might be nervous to do it but I would...I like to make new friends...etc.

A score of **4**: I would definitely introduce myself to the new neighbors...(Mentioning love meeting new people, starting conversations, find it easy to make new friends, feel energized by others...etc).

<u>Agreeableness</u> You are at the grocery store one day and the person in front of you leaves a bag in the store. The grocery store clerk asks you to take the bag and run it out to the person. Would you go after them, and why/why not?

<u>Examples of Valid Responses</u>

A score of **1**: I would not go after the person because it's their fault they left the bag in the store...I don't really care about their problems...etc.

A score of **2**: I might consider it but would probably not go after the person because I don't necessarily think it's my job to run the bag to the person...etc.

A score of **3**: I would probably go out after the person because they left the bag by accident and I feel bad for them...etc.

A score of **4**: I would definitely go run after the person to give them their bag...They could have something really important in there and I wouldn't want them to leave without it...(Mentions things that imply they: have interest in others/care about others, enjoys helping people or assisting them, expresses empathy, etc.)

<u>Neuroticism</u> You are about to go to bed and have the next 2 days off from work when you get a phone call from your manager. They tell you that they got food poisoning and ask you if you will take their shift for them in the morning. However, you have to take on the role as the manager. Would you cover for them, and why/why not?

<u>Examples of Valid Responses</u>

A score of **1**: I would go in for my manager because they are sick, and I completely understand why they can't go to work...This situation wouldn't really stress me out...etc.

A score of **2**: I would probably go in for my manager...I might be a little frustrated, but nothing crazy because I understand...etc.

A score of **3**: I would be really frustrated/anxious about the situation and I would probably tell them to ask someone is they could cover for them...etc.

A score of **4**: I would be extremely frustrated that my manager is texting me right before bed asking me to cover for them...No I have to worry about getting gas in the morning and having to reschedule my entire day...Tell them to ask someone else to cover...(Mentions anything about severe frustration, annoyance, anxiety..etc.).

The General Population's Understanding of Mental Illness

Iris Walker-Tjepkes†

Objective: *The goal of this study was to show to what extent people understand different mental illnesses and what ideas they have about mental illnesses are right or wrong. The study also attempted to compare differences in responses for different names of the same disorders. The mental illnesses examined were major depressive disorder (MDD), dissociative identity disorder (DID), post-traumatic stress disorder (PTSD), and schizophrenia.* ***Method:*** *Participants (N = 80) took a Qualtrics survey that asked questions about different mental illnesses. Each disorder had open response questions regarding the criteria for that disorder. For each disorder, there was no prior information about that disorder given to affect the response, meaning that none of the responses should have been influenced by any information in the survey. Content analysis was used to analyze the responses and determine which responses were correct or incorrect as criteria and whether responses changed based on different names for the same disorder.* ***Results:*** *A variety of answers were given on the survey including both correct and incorrect responses. The correct answers helped provide a basis that people understand some characteristics of mental illnesses. There were some differences shown in responses for different names of the same disorder which were mostly shown by incorrect responses.* ***Conclusion:*** *Although there is a very basic understanding of each mental illness, this understanding is minimal and people must be further educated on mental illnesses with an emphasis on the criteria people missed most often.*

The purpose of this study was to see how well the general public understands different mental illnesses. The mental illnesses in question are major depressive disorder (MDD), dissociative identity disorder (DID), post-traumatic stress disorder (PTSD), and schizophrenia. Many studies have focused on mental health literacy, the understanding of different mental health issues, but none of these studies asked participants to just list what they thought about mental illnesses from memory. Studies typically either gave options for answers or focused more on stigma rather than just asking their participants their thoughts on the subject. The present study asked participants purely what they think about disorders from memory which can give a different insight into how people view mental illnesses.

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Multiple studies have looked into different attitudes and stigma towards people with different mental illnesses (Holzinger et al., 2012; Ponizovsky et al., 2003; Smith et al., 2011). Stigma regarding different mental illnesses is important in showing how people feel about different mental illnesses. Schizophrenia tended to be the least understood of mental illnesses and has been found to have a lot of misinformation and stigma surrounding it (Smith et al., 2011). Stigma can often be a good indicator of how people think about people with different mental illnesses, but it doesn't necessarily help explain what people are thinking about the mental illnesses themselves.

Ponizovsky et al. (2003) looked into how different school principals viewed different mental illnesses and found that almost a third of the respondents did not know what caused depression and about a quarter of them did not view depression as a mental disorder at all. This study shows important insights into how people view depression and how depression is often misunderstood. With similar results regarding understanding, other studies have found that while there is a high rate of people with mental illnesses, relatively few people have a good understanding of these mental illnesses (Lam, 2014; Lauber et al., 2003). Again, depression specifically was found to not be recognized as a mental illness when participants were given a vignette of someone with depression and asked whether they were in crisis or had an illness (Lauber et al., 2003).

Furnham and Winceslaus (2011) looked specifically at the understanding of personality disorders, including schizotypal disorders. In their study they gave participants ten vignettes of different personality disorders and asked them to label whether the person had a psychological problem or not, and if they did have a psychological problem, what problem they thought it was. Their main finding was that participants would typically not label the vignettes as showing a

psychological problem, and if they did recognize that the description exemplified a

psychological problem, they would often give an incorrect answer as to what the problem was.

This study involved open response questions, but instead of using the open response questions to

assess the participants' thoughts about disorders, they used the open response to see what

disorders the participants would label different vignettes.

Gorczynski et al. (2017) focused on looking at the understanding of mental illnesses with

a population of university students. They found that the students who understood the disorders

the best were those who were the most likely to seek help. This goes to show it is important to

make sure people understand different illnesses so they can better understand when they, or their

friends, should seek help. In order to better educate people on mental illnesses though, it must

first be assessed what people don't know about mental illnesses.

It has been established that there is a lack of understanding of psychological disorders,

but it is not necessarily known what aspects of disorders people are misunderstanding. People

lack understanding of personality disorders (Furnham & Winceslaus, 2011), but it is unknown

what characteristics of personality disorders people have wrong. Depression was not recognized

by a decent amount of people (Ponizovsky et al., 2003), but it is unknown what specific aspects

of depression participants did not recognize.

In order to better understand what people were not understanding about mental illnesses,

the present study used open-response questions to better assess what specific criteria people

would answer either correctly or incorrectly for different mental illnesses. It was expected that

participants would understand at least some aspects of each mental illness. It was also expected

that participants would give some incorrect answers for each mental illness and they would give

different responses based on different names of the same disorder. The present study included

questions regarding depression and schizophrenia which were disorders often misunderstood in previous literature. An important reason to better understand people's knowledge of mental illnesses was to be able to better inform people based on what they didn't know or what they answered incorrectly about on the survey. The use of open response questions was important in order to acquire a response from participants that wasn't affected by stock options. It was important to have responses that accurately reflected the thoughts of the participants without making them choose answers based on recognition.

Method

Participants

The inclusion criterion for participants was to be 18 years old or older. Anyone who took the survey but did not have any responses for any of the open response questions were excluded from the data. There were three respondents who only responded to a couple of the disorders, but they were still included as participants since they responded to at least one of the open response questions. Of those who were included in the data (N=80), there were 27 men, 52 women, and 1 person who chose the "other" category. Of the five age categories, 62 (77.5%) were between 18 and 29 years old, 4 (5%) were between 30 and 39 years old, 8 (10%) were between 40 and 49 years old, 3 (3.8%) were between 50 and 59 years old, and 3 (3.8%) were 60 years old and up. Of the 80 participants, 48 (60%) had not taken any psychology course related to psychological disorders, 28 (35%) had, and 4 (5%) were unsure. Regarding race and ethnicity, 2 (2.5%) were African American/Black, 68 (85%) were European American/White, 2 (2.5%) were Asian, 6 (7.5%) were Hispanic/Latinx, 1 (1.3%) was Native American, and 1 (1.3%) selected "other."

The survey was posted on Instagram, Twitter, and Facebook. Anyone with the link was able to take the survey but the instructions clarified that it was only for people 18 years old and

older. The goal was to get at least 100 participants and the survey ended up having 106

respondents but only 80 who qualified as participants. There was no compensation for taking the

survey. The survey and research project were approved by and met the ethical standards of both

the Lindenwood University Psychology Program Scientific Review Committee and Institutional

Review Board.

Materials

The survey was made with Qualtrics and all of the questions were originally written. The

survey started with the consent form and the four demographic questions regarding gender, age,

race/ethnicity, and whether the participant had ever taken a college course regarding

psychological disorders or not. The questions after the demographics referred to different

psychological disorders. The different disorders were major depressive disorder (MDD), which

also had questions about depression, dissociative identity disorder (DID), which also had

questions about multiple/split personality disorder, post-traumatic stress disorder (PTSD), and

schizophrenia. Each individual disorder had a question asking whether the participant had ever

heard of it before, and if they said yes it would be followed up by open response question asking

the participants to list what they thought the criteria were for that disorder. Each disorder also

had its own multiple choice question(s) asking more specific questions of the disorder, such as

asking how long the symptoms would have to last in order to diagnose the disorder (see

Appendix). The DSM-5 was used to determine what the criteria were for each disorder. Taking

the survey required either a computer or a phone and the survey could be taken in any location

that the participant had an internet connection and had access to the link through either

Instagram, Twitter, or Facebook.

Measures

The survey's main purpose was to see the general population's understanding of different

psychological disorders by testing what criteria people would give for different psychological

disorders and whether they would give correct criteria or not. The criteria for each disorder from

the DSM-5 were used to determine which responses were correct and which were not. Another

measure from the survey was people's incorrect thoughts about different psychological disorders

which could be seen by what criteria people were giving that were wrong. One other measure

was how well people knew disorders based on different names of the same disorder, and whether

different names for the same disorder would change how they responded. This was measured

based on whether people would answer differently for different names of the same disorder, and

if so, how the answers changed.

Design

The survey had seven blocks of questions. A block of questions is just a certain amount

of questions that are put together for organizational sake and to be able to manipulate the order

of the questions shown in the most preferable way for the experiment. The questions inside each

individual block were always shown in the same order they were listed on the survey (see

Appendix). The order of the questions inside each block was important to make sure the

participants were not influenced by other questions regarding that disorder when they answered

the open response questions. The block that was always shown first on the survey was the

consent block which has the information and consent form. In order to be able to take the rest of

the survey, the participants needed to select the option "I verify that I am at least 18 years of age

and consent to take this survey." If anyone were to not select this option, they would be sent to

the end of the survey and were therefore unable to answer any of the other questions. The second

block of questions was the demographic block which contained questions regarding gender, age, race/ethnicity, and history with classes regarding psychological disorders.

For the four blocks following the demographics, each was designated as a different psychological disorder. The order of these four blocks was randomized as to counteract any error from participant fatigue. This means that the order in which participants answered questions for each individual disorder was random. This randomization was also set on Qualtrics to be evenly presented as to make sure each disorder was shown first and last about the same amount of times so the data could be as reliable as possible.

Both MDD and DID had multiple names on the survey. To be able to see both whether people recognize different names for the same disorder and whether people have different responses for the same disorder based on different names, the order of the questions pertaining to the different names was important. MDD is often referred to as depression, and DID has been called multiple personality disorder and split personality disorder. Because MDD and DID are the clinical terms whereas depression and multiple/split personality disorder tend to be the more common or well-known terms, the clinical terms were always asked about first in their blocks. This was done to test whether people truly knew what the clinical terms were before the more common terms were given and whether they thought the clinical terms were different from the more common terms.

Analysis

Content analysis was used to organize the responses and assess whether they were correct as criteria or not. Content analysis was also used to compare responses for disorders with multiple names and to analyze the most common incorrect responses.

Results

The main hypothesis was that the general population would know at least basic characteristics for each disorder. Operationally defined, this would mean that at least half of the respondents gave correct answers for each disorder. The other hypotheses were that participants would give different answers for different names of the same disorder, and that participants would give responses for criteria that would be incorrect.

For MDD, 64 participants (80%) said they had heard of the disorder and 16 (20%) said they had not. Of those who said they had heard of MDD, 76 (95%) gave a response. Of those who responded, 56 (98.1%) gave at least one correct symptom. For depression, all 80 participants said they had heard of depression before and 76 (95%) of them gave a response. Of respondents, 63 (82.9%) got at least one symptom correct.

There were nine symptoms that counted as criteria for MDD and depression. The different criteria accepted as correct were feeling sad or depressed, a lack of pleasure from activities, a change in weight or appetite, a change in sleep, slowed movements, fatigue, feeling worthless or inappropriately guilty, indecisiveness or the decreased ability to think or concentrate, and thoughts or attempts of death or suicide. Participants did not have to respond in the exact wording in order for the response to count as one of the criteria.

For both MDD and depression, the symptom that was answered correctly the most was feeling sad or depressed with 31 (50.8%) of those who responded for MDD and 32 (42.1%) of those who responded for depression. Of the nine criteria, the average amount of criteria answered correctly was 1.95 for MDD, ranging from 0 to 6 criteria correct, and 1.85 for depression, ranging from 0 to 5 criteria correct.

The most common incorrect answer for MDD was responding with some period of time

that the symptoms had to last in order for a person to have MDD that was longer than what is

true. Of respondents, 14 (12.5%) gave this response, whereas only 2 (2.6%) respondents gave

that answer for depression. The most common incorrect answer given for depression was the

response that being unmotivated was a criterion for depression. Of respondents for depression,

17 (22.4%) gave this response and it was given by slightly fewer respondents for MDD with 8

(12.5%) responses. An interesting difference in responses between MDD and depression was that

some mention of brain chemical was given by 6 (7.9%) participants for depression but only 1

(1.5%) participant for MDD. This isn't a large difference but it is interesting that more people

would give that response for depression and not MDD. The amount of responses for the other

criteria are shown in Table 1. The percentage of responses for each of the criteria was relatively

the same for MDD and depression with slight differences.

For the multiple-choice question regarding how long symptoms for MDD/Depression

have to last to be diagnosed, 11 participants (13.9%) correctly answered two weeks. The most

common response was "Unsure" with 34 (43%) participants and 33 (31.8%) participants

responded a length of time longer than two weeks.

For DID, 54 participants (67.5%) said they had heard of the disorder and 25 (31.3%) said

they had not. Of those who said they had heard of the disorder, only 51 (94.4%) responded. The

main symptom of DID and multiple/split personality disorder is having multiple personalities,

but the DSM-5 also includes ways to tell if a person has multiple personalities. Although

multiple personalities is the only criteria, if a person failed to mention multiple personalities but

gave at least one of the traits that can show multiple personalities, they were counted as

answering correctly. Of those who responded, 31 (60.8%) responded correctly that DID is

multiple personalities or gave at least one trait that shows a person has multiple personalities. For multiple/split personality disorder, 73 participants (91.3%) said they had heard of multiple/split personality disorder and 5 (6.3%) said they had not. Of those who said they had heard of multiple/split personality disorder, 67 (91.8%) gave a response. Of the respondents, 58 (86.6%) answered correctly with either multiple personalities or a trait that shows a person had multiple personalities.

The most common incorrect answer for both DID and multiple/split personality disorder was some mention of trauma. Although trauma is an aspect of DID, the DSM-5 does not list it as a criterion for having DID. Of respondents, 6 (11.8%) gave this response for DID and 5 (7.5%) gave this response for multiple/split personality disorder. An interesting difference in responses between DID and multiple/split personality disorder was schizophrenia or schizophrenia symptoms were given by 5 (9.8%) participants for DID but no participants for multiple/split personality disorder. Another interesting difference was that some sort of mention of triggers was given by 3 (4.5%) respondents for multiple/split personality disorder, but no respondents gave that answer for DID.

For the multiple-choice question regarding whether hallucinations were a criterion for DID/ Multiple/Split Personality Disorder, 27 participants (36%) correctly answered no whereas 16 (21.3%) said yes and 32 (42.7%) said they were unsure.

For PTSD, 77 participants (96.25%) said they had heard of the disorder and 2 (2.5%) said they had not. Of those who said they had heard of the disorder, 76 (98.7%) gave a response. In the DSM-5 there are a lot of criteria that can count for PTSD, but they're separated into five different categories. For the analysis of PTSD the criteria were those five categories and any mention of a symptom that would be in one of those categories counted towards that criteria.

These criteria were exposure to a traumatic event, symptoms (such as flashbacks or anxiety), avoidance symptoms, negative mood or cognition, and a change in arousal or reactivity. Of those who responded, 76 (100%) answered at least one correct symptom. The average amount of criteria correct was 1.97 ranging from 1 to 4 criteria correct. The most common response given was giving a response that fell into the symptoms category which was given by 61 (80.3%) of the respondents. The amount of other responses given for PTSD can be seen in Table 2.

There were many different wrong answers given, but most of them were individual answers rather than multiple people giving the same type of incorrect response. The most common response given that didn't count as a criteria were examples of PTSD. Although these aren't particularly wrong answers for PTSD, they were incorrect for the question since the question just asked for criteria of PTSD. Of the respondents, 5 (6.6%) gave an example of PTSD.

For the multiple-choice question asking participants to select all that applied that were listed as possible criteria for developing PTSD, 75 (98.7%) of respondents selected sexual violence, 64 (84.2%) selected death, 43 (56.6%) selected embarrassment, 76 (100%) selected serious injury, and 76 (100%) selected war. The only incorrect answers were embarrassment and war, and every participant answered at least one of them. Although war has death in it which can cause PTSD, war itself is not listed in the criteria for PTSD which is why it is a wrong answer. For the multiple-choice question regarding whether everyone with PTSD has flashbacks, 53 participants (73.7%) answered correctly and said no whereas 6 (7.9%) said yes and 17 (22.4%) said they were unsure.

For schizophrenia, 78 (97.5%) participants said they had heard of it and 2 (2.5%) said they had not. Of those who said they had heard of schizophrenia, 74 (94.9%) gave a response. There were five symptoms that counted as criteria for schizophrenia. These criteria were

delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior, and

negative symptoms. Of respondents, 61 (82.4%) got at least one symptom right and respondents

answered on average 1.19 criteria correct, ranging from 0 to 3 correct criteria. The criteria that

respondents answered correctly the most often was hallucinations with 52 (70.3%) giving it as a

response. The amount of responses given for the other criteria of schizophrenia can be seen in

Table 3.

The most common responses given that were incorrect were mentions of mania and

responses involving multiple personalities. Of respondents, 6 (8.1%) mentioned mania and 4

(5.4%) mentioned multiple personalities. For the multiple-choice question regarding whether

having multiple personalities was a criterion for Schizophrenia, 38 participants (48.7%) correctly

answered no, 15 (19.2%) answered yes, and 25 (32.1%) responded they were unsure.

When asked at the end of the survey whether the participants knew anyone with any of

the disorders involved in the survey, 68 (88.3%) said they did, 4 (5.2%) said they did not, and 5

(6.5%) said they were unsure.

Discussion

The hypothesis that participants would understand basic features of each mental illness

was partially supported. For each mental illness, respondents averaged more than one criterion

correct. This shows a basic understanding of these mental illnesses, but considering

MDD/depression had nine criteria and PTSD and Schizophrenia had five criteria, averaging

around one or two criteria correct is less than 50% accuracy. Regarding the multiple-choice

questions, there was only one question in which at least half of respondents answered correctly,

that question being whether everyone with PTSD has flashbacks. This shows an even further

lack of understanding of these mental illnesses. Technically there was a very basic understanding

shown from the open responses, but the results from the open response and multiple-choice questions show a clear need for further education regarding mental illnesses.

Another hypothesis was that people would give incorrect answers for each of the mental illnesses. This was supported because each mental illness did have responses that were not correct as criteria. There were also some incorrect answers that were given more often than others, which suggests that these are relatively common misconceptions. Although only a small percentage of respondents for each disorder said the same incorrect answer, the fact that multiple people responded with those answers supports the idea that there are many people with the same incorrect ideas about certain mental illnesses. It is also possible that with a larger population there could be a higher percentage of these misconceptions.

The last hypothesis was that participants would give different answers for different names of the same disorder. This hypothesis was supported because for both MDD/depression and DID/multiple/split personality disorder, different answers were given. For MDD and depression, there was not a noticeably large difference in the correct criteria given as seen in Table 1. The percentages of respondents that answered each criterion correctly for MDD and depression are all within five percent for each criterion. The main differences were seen in the incorrect answers. Long periods of time were mentioned more often for MDD than depression by about ten percent. This is an interesting difference because it infers that MDD is a more serious illness than depression since it has to last longer.

For DID and multiple/split personality disorder, there was about a 20% difference in the amount of respondents that answered the single criterion of multiple personalities correctly, with respondents answering correctly more often with the name multiple/split personality disorder rather than DID. This difference most likely comes from the fact that multiple personalities was

in the title of one and not the other, but it is still an important difference to bring attention to.

Regarding the differences of incorrect responses for DID and multiple/split personality disorder,

the main difference was that people tended to associate DID with schizophrenia and people had a

tendency to associate multiple/split personality with triggers. It was even more interesting that

although schizophrenia was associated with DID, no one gave schizophrenia or symptoms of

schizophrenia as a response for multiple/split personality disorder. It's curious why

schizophrenia would be associated with the newer name of DID but not the older, more common

name, but it still shows a misconception of what DID is. Again, both of these incorrect answers

were only given by small percentages of the respondents, but it still shows a common

misconception or belief.

      One issue with this study was that there were only 80 participants included in the data.

Unfortunately this is not a very large population and the data is therefore not as representative as

it otherwise could have been. Another limitation of the study was the ability to accurately label

responses as correct or incorrect for criteria. Although the DSM-5 was used to define the criteria

that were used, all the variation in responses made categorizing difficult which increased the

chance of measurement error. The criteria in the DSM-5 can also be interpreted differently by

different people which can complicate matters even more. Another limitation came from the

multiple-choice questions used for PTSD. Unfortunately, the question regarding criteria for

developing PTSD did not seem to be clear enough on the fact that the survey was looking for

official criteria. For the PTSD question regarding flashbacks, the wording included the word

"everyone" which was a mistake because the answer to most questions with definitive questions

are "no." Future studies may want to consider rephrasing these questions in order to more

accurately represent the knowledge of the participants.

If this study is to be replicated in the future, adding other mental illnesses or switching out some of the mental illnesses may be beneficial. Some of the responses received from the survey indicate that bipolar disorder specifically may be a disorder that people have misconceptions about, so adding bipolar disorder, possibly with manic depressive disorder as a second name, may be helpful.

One use of the information found in this study is to use the criteria that respondents answered less often as a basis for teaching the disorder in the future. Clearly people know less about these criteria so they should be given special attention in the future so people can better understand these mental illnesses and be more aware of the symptoms in themselves and those around them.

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Table 1

Responses for MDD and Depression Criteria

Criteria	MDD		Depression	
	n	%	*n*	%
Feeling sad or depressed	31	50.8	32	42.1
Lack of pleasure from activities	16	26.2	24	31.6
weight/appetite +/-	13	21.3	18	23.7
sleep change	13	21.3	18	23.7
slowed movements	0	0	0	0
Fatigue	18	29.5	23	30.3
feeling worthless or inappropriately guilty	4	6.6	7	9.2
Indecisiveness or the decreased ability to think or concentrate	3	4.9	0	0
thoughts/attempts of death/suicide	18	29.5	17	22.4

Table 2

Responses for PTSD Criteria

Criteria	PTSD	
	n	%
Exposure to a Traumatic Event	46	60.5
Symptoms	61	80.3
Avoidance Symptoms	5	6.6
Negative Mood or Cognition	21	27.6
Change in Arousal or Reactivity	17	22.3

Table 3

Responses for Schizophrenia Criteria

Criteria	Schizophrenia	
	n	%
Delusions	25	33.8
Hallucinations	52	70.3
Disorganized Speech	3	4.1
Grossly Disorganized or Catatonic Behavior	3	4.1
Negative Symptoms	4	5.4

Appendix

Survey

A Survey of the General Population's Knowledge of Mental Illnesses

Survey Flow

Standard: Consent (1 Question)

Standard: Demographics (4 Questions)

BlockRandomizer: 4 - Evenly Present Elements

> **Block: Major Depressive Disorder/Depression (5 Questions)**
>
> **Standard: DID/ Multiple/Split Personality Disorder (5 Questions)**
>
> **Standard: PTSD (4 Questions)**
>
> **Standard: Schizophrenia (3 Questions)**

Standard: Relation (1 Question)

Page Break ───

───

Start of Block: Consent

Q1   **Survey Research Information Sheet**

You are being asked to participate in a survey conducted by Iris Walker-Tjepkes at Lindenwood University under the guidance of Dr. Michiko Nohara-LeClair. We are doing this study to gather information regarding the general public's knowledge of mental illnesses. You will be asked different questions regarding Major Depressive Disorder, Schizophrenia, Dissociative Identity Disorder, and Posttraumatic Stress Disorder. It will take about 15 to 20 minutes to complete this survey. Your participation is voluntary. You may choose not to participate or withdraw at any time by simply not completing the survey or closing the browser window. There are no risks from participating in this project. We will not collect any information that may identify you. There are no direct benefits for you participating in this study. **WHO CAN I CONTACT WITH QUESTIONS?** If you have concerns or complaints about this project, please use the following contact information: Iris Walker-Tjepkes iw900@lindenwood.edu Dr. Nohara-

LeClair mnohara-leclair@lindenwood.edu If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.   You can withdraw from this study at any time by simply closing the browser window. Please feel free to print a copy of this information sheet.

○ I verify that I am at least 18 years of age and consent to take this survey (1)

○ I do not consent to take this survey and/or I am younger than 18 years of age (2)

Skip To: End of Survey If   Survey Research Information Sheet You are being asked to participate in a survey conducted by... != I verify that I am at least 18 years of age and consent to take this survey

End of Block: Consent

Start of Block: Demographics

Q2 What is your gender?

○ Male (1)

○ Female (2)

○ Other (3)

Q3 What is your age?

◯ 10-17 (1)

◯ 18-29 (2)

◯ 30-39 (3)

◯ 40-49 (4)

◯ 50-59 (5)

◯ 60+ (6)

Skip To: End of Survey If What is your age? = 10-17

Q4 Have you ever taken a class relating to different psychological disorders, such as an abnormal psychology class?

◯ Yes (1)

◯ No (2)

◯ Unsure (3)

Q5 What is your race/ethnicity?

◯ African American/Black (1)

◯ European American/White (2)

◯ Asian (3)

◯ Hispanic/Latinx (4)

◯ Native American (5)

◯ Pacific Islander/Hawaiian (6)

◯ Other (7)

End of Block: Demographics

Start of Block: Major Depressive Disorder/Depression

Q6 Have you ever heard of Major Depressive Disorder?

◯ Yes (1)

◯ No (2)

Display This Question:
   If Have you ever heard of Major Depressive Disorder? = Yes

Q7 What do you think the criteria are for a person to be diagnosed with Major Depressive Disorder?

_____

_____

_____

_____

_____

Q8 Sometimes Major Depressive Disorder is referred to as depression. Have you heard of Depression?

○ Yes (1)

○ No (2)

Display This Question:

   If Sometimes Major Depressive Disorder is referred to as depression. Have you heard of Depression? = Yes

Q9 What do you think the criteria are for a person to have Depression?

_____

_____

_____

_____

_____

Display This Question:

   If Have you ever heard of Major Depressive Disorder? = Yes

   Or Sometimes Major Depressive Disorder is referred to as depression. Have you heard of Depression? = Yes

Q10 How long do the symptoms of Major Depressive Disorder/Depression have to last in order to be diagnosed?

○ One week (1)

○ Two weeks (2)

○ Four weeks (3)

○ Six weeks (4)

○ Unsure (5)

End of Block: Major Depressive Disorder/Depression

Start of Block: DID/ Multiple/Split Personality Disorder

Q11 Have you ever heard of Dissociative Identity Disorder (DID)?

○ Yes (1)

○ No (2)

Display This Question:

  If Have you ever heard of Dissociative Identity Disorder (DID)? = Yes

Q12 What do you think the criteria are for a person to be diagnosed with Dissociative Identity Disorder?

_____

_____

_____

_____

_____

Q13 Dissociative Identity Disorder (DID) was formerly known as Multiple/Split Personality Disorder. Have you heard of Multiple/Split Personality Disorder?

○ Yes (1)

○ No (2)

Display This Question:

    If Dissociative Identity Disorder (DID) was formerly known as Multiple/Split Personality Disorder. H... = Yes

Q14 What do you think the criteria are for a person to have Multiple/Split Personality Disorder?

_____

_____

_____

_____

_____

Display This Question:

    If Have you ever heard of Dissociative Identity Disorder (DID)? = Yes

    Or Dissociative Identity Disorder (DID) was formerly known as Multiple/Split Personality Disorder. H... = Yes

Q15 Are hallucinations one of the criteria to have DID/ Multiple/Split Personality Disorder?

○ Yes (1)

○ No (2)

○ Unsure (3)

End of Block: DID/ Multiple/Split Personality Disorder

Start of Block: PTSD

Q16 Have you ever heard of Post Traumatic Stress Disorder (PTSD)?

○ Yes (1)

○ No (2)

Display This Question:

If Have you ever heard of Post Traumatic Stress Disorder (PTSD)? = Yes

Q17 What do you think the criteria are to be diagnosed with Post Traumatic Stress Disorder?

_____

_____

_____

_____

_____

Display This Question:

If Have you ever heard of Post Traumatic Stress Disorder (PTSD)? = Yes

Q18 Which of these are listed as the possible criteria for developing PTSD? (select all that apply)

☐ Sexual violence (1)

☐ Death (2)

☐ Embarrassment (3)

☐ Serious injury (4)

☐ War (5)

Display This Question:
If Have you ever heard of Post Traumatic Stress Disorder (PTSD)? = Yes

Q19 Does everyone with PTSD have flashbacks?

○ Yes (1)

○ No (2)

○ Unsure (3)

End of Block: PTSD

Start of Block: Schizophrenia

Q20 Have you ever heard of Schizophrenia?

○ Yes (1)

○ No (2)

Display This Question:
If Have you ever heard of Schizophrenia? = Yes

Q21 What do you think the criteria are for someone to be diagnosed with Schizophrenia?

_____

_____

_____

_____

_____

Display This Question:

   If Have you ever heard of Schizophrenia? = Yes

Q22 Is having multiple personalities a criterion for a Schizophrenia diagnosis?

○ Yes (1)

○ No (2)

○ Unsure (3)

End of Block: Schizophrenia

Start of Block: Relation

Q23 Do you know anyone who has one of these disorders (Major Depressive Disorder/Depression, Schizophrenia, PTSD, or DID/ Split/Multiple Personality Disorder)

○ Yes (1)

○ No (2)

○ Unsure (3)

End of Block: Relation

Attitudes Toward Mental Health, Attitudes Toward Mental Healthcare, and Access to Mental Healthcare: Variations Based on Key Demographic Factors

Mariya Gaither [*]

Objective: *The objective of this study was to discern what factors may cause variations in a person's attitudes toward mental health and mental healthcare, as well as their access to mental healthcare. The factors that were the focus of this study included: race/ethnicity, age, religiosity, gender identity, location, and socioeconomic status.* ***Method:*** *A total of 132 participants participated in the online study. Participants were asked to answer questions that assessed their attitudes about mental health and mental healthcare as well as the access to mental healthcare in their community. The survey also consisted of several demographic questions which asked participants about their age, race/ethnicity, gender identity, socioeconomic status, their location, and their level of religiosity.* ***Results:*** *There are several statistically significant differences in attitudes toward mental health, mental healthcare, and access to mental healthcare based on demographic factors. There is also a significant correlation between an individual's religiosity and their attitudes toward mental healthcare. These differences are caused by a variety of social and cultural differences.* ***Conclusion:*** *While this research study is a step in the right direction to begin remedying problems within the mental healthcare system, there is still a significant amount of work to be done. More research should be conducted to see if there are other differences in attitudes toward mental health and mental healthcare, as well as access to mental healthcare based on other demographics such as sexual orientation.*

Recently, there has been an overwhelming amount of media attention on the disparities that occur in the United States healthcare system and how these disparities often impact people who identify as women and people of color. While there has been immense coverage on this topic in the healthcare system, there has been little to no coverage on how these disparities impact our mental healthcare system or why these disparities exist. However, there has been a plethora of negative media coverage about individuals who are suffering from mental illnesses, which creates a stigma around mental health. This media coverage is compounded with the lack and removal of resources in many communities across the country. Due to the lack of access to resources there are people who need mental healthcare and do not have access to care. Many

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people who have access to care but are avoiding care because of the negative attitudes that surround mental illnesses or because they believe that seeking this care goes against their religious, personal, or political values. My research aimed at examining how these attitudes about mental health and mental healthcare, as well as access to mental healthcare varies across a variety of demographics. The results of my research could be used to remedy some of these issues by identifying groups that need education on mental health and mental healthcare as well as redistributing resources to communities who have been identified as poor or as having inadequate resources based on the demographic questions in my study.

The previous research on this subject has covered several cultural and social barriers that deter some groups of people from receiving mental healthcare, especially when the therapist has not had any training on the cultural background of the client (Singh et al., 1998). Previous research by Meyer et al. (2014) has also looked at how socioeconomic status has an influence on a person's access to mental healthcare based on the access they have to commodities and social and emotional resources. The research has also explored the notion that there may be a relationship between an individual's socioeconomic status and their overall mental health, including higher mortality and morbidity rates, as well as higher rates of serious mental illnesses, like clinical depression (Meyer et al., 2014). Research by Wu et al. (2017) and Tobler et al. (2013) has also explored some of the racial and ethnic differences in mental health treatment that may impact whether individuals who identify as ethnic or racial or sexual minorities seek mental healthcare, including stigma from their respective communities and lack of healthcare coverage. While there has been a large amount of research done on this topic, it has largely been done using meta-analysis data; I hope for my research to show how self-report data portray the same issues.

Cultural Barriers to Mental Healthcare

One of the main issues discussed in the literature is that many mental healthcare providers are unaware of how communication differs across cultures. American culture tends to use high context communication, which is described as almost entirely verbal, whereas other cultures tend to use low context communication, which is described as almost entirely non-verbal communication with some subtle verbal cues that are passed from generation to generation through culture (Singh et al., 1998). These differences in communication often deter individuals from seeking or continuing the care that they may truly need because there are miscommunications that disrupt the therapeutic experience and may offend the client (Singh et al., 1998). Therefore, the mental healthcare system must reevaluate the training that they provide to psychologist and other practicing mental healthcare providers (Singh et al., 1998). If the training is not changed then it is possible that many individuals will stay away from the mental healthcare system due to these subtle macroaggressions.

Research on the topic has also found that a cultural barrier that prevents many individuals who represent ethnic and cultural minorities from seeking out mental healthcare is that they have a lack of trust for the mental healthcare system (Ojeda & Bergstresser, 2008). One explanation for the distrust between minority communities and mental healthcare providers is that many individuals feel like the mental healthcare system has the tendency to overlook the systemic factors that are associated with being a member of a minority group in our society when they are providing care to people in these groups (Wu et al., 2017). Individuals feel that many societal and cultural issues such as poverty and racism, which have a significant impact on their mental health are not being addressed in the care that they are receiving (Eack & Newhill, 2012). Since individuals are not able to talk about these issues in a therapeutic environment, they tend to

stay away from the mental healthcare system all together (Eack & Newhill, 2012). Many

minority individuals also report that they have heard stories of mental health professionals

conducting unethical research with participants from their community (Ojeda & Bergstresser,

2008). They report that this is one of the reasons they will not seek out care because they are

afraid that they will fall victim to the same practices without their knowledge (Ojeda &

Bergstresser, 2008). Studies have also found that minority individuals are more selective in what

they are willing to share with their mental healthcare provider because they believe that they will

be judged based on what they say in conjunction with their racial or ethnic background (Wolkon

et al., 1973).

Much of the past research has identified the tendency for mental health professionals to

be inadvertently biased towards the impact of culture within the therapeutic relationship (Singh

et al., 1998). The lack of education about cultural differences has created a large breach in the

relationship between individuals who belong to these cultural minorities and the mental

healthcare system. This disjuncture between the two groups has left a significant portion of the

population with mental illnesses that are going un- or undertreated.

Social Barriers to Mental Healthcare

Researchers have found that people have begun to hold more negative attitudes toward

mental health in the last few decades (Wu et al., 2017). This shift in attitudes has made many

people feel like they will be discriminated against if others find out that they have a mental

illness or are seeking treatment for mental illnesses (Ojeda & Bergstresser, 2008; Wu et al.,

2017). So many individuals avoid the mental healthcare system as much as possible, and if they

have already had contact with the mental healthcare system, they may discontinue their care

(Ojeda & Bergstresser, 2008; Wu et al., 2017). Whether someone chooses to seek care varies

based on how much the individual believes that the stigma associated with mental healthcare will tarnish their reputation or social standing, which depends on the racial/ethnic identity, gender identity, and socioeconomic status of the individual (Ojeda & Bergstresser, 2008).

A key part in understanding the stigma that inhibits many individuals from receiving care is the difference between three types of stigma. Public stigma is a stigma that arises from societal pressures to avoid those who are mentally ill and for individuals to avoid interaction with the mental healthcare system all together (Wu et al., 2017). Self or personal stigma occurs when a person holds negative attitudes about those who are mentally ill based on what they have learned from society, and then applies those negative ideas about those who are mentally ill to themselves, even if the ideas are not true (Wu et al., 2017). Structural stigma are societal barriers that prevent individuals from accessing mental healthcare even if they do not experience public or self-stigma (Wu et al., 2017). Research has found that long term avoidance of the mental healthcare system due to any form of stigma can lead to the experience of more severe mental illness than when there is consistent contact with the mental healthcare system (Ojeda & Bergstresser, 2008; Wu et al., 2017).

There has been a large amount of research that has suggested that the impact of stigma is different based on the demographics of an individual. Some research has found that people who identify as male, individuals who are racial/ethnic minorities, who are older, who identify as TGNC, and who have fewer years of education are less likely to engage with the mental healthcare system or to seek mental healthcare (Hack et al., 2019; Kim & Fredrickson, 2017). However, some studies have found that demographics alone are not predictors of whether an individual will seek mental healthcare. While it was found that demographics were a key part in assessing whether someone will interact with the mental healthcare system, research has also

stated that the lack of interaction was enhanced by the lack of education on mental health and mental illnesses, so if an individual had some understanding of mental illnesses, they would be more likely to engage with the mental healthcare system (Wu et al., 2017). One study suggests that the reason minority individuals avoid mental healthcare is because of how they believe others within their minority group will view their need for mental healthcare (Kim & Fredrickson, 2017). Another study has found that demographics are not as important as many studies make them seem, but rather it is how an individual interprets all of the stigma that exists that makes a difference in an individual's decision to pursue care (McLeod & Shanahan, 1993; Roman et al., 2008).

Stigma is a significant barrier for many individuals when they are deciding whether they want to interact with the mental healthcare system. While the research is not clear on how stigma interacts with a larger variety of demographics or education on the topic, it dissuades many individuals from seeking mental healthcare. Therefore, addressing how to minimize the stigma that individuals associate with mental illness should be a large concern of the psychological community.

Socioeconomic Status and Mental Health/Healthcare

Socioeconomic status (SES) has been identified as a significant reason why many individuals do not receive mental healthcare. However, many individuals do not see the link between systemic poverty and its overall impact on an individual's mental health for the duration of their life. Several studies have been dedicated to understanding not only how SES relates to access to mental healthcare, but also how it may have an adverse impact on individuals' mental health throughout their lifespan.

SES has been regarded as the most important factor in determining whether an individual decides to pursue mental healthcare, regardless of any other demographic group that an individual belongs to (Wolkon et al., 1973). Some research findings have shown that higher SES is related with higher subjective mental health and objective mental health due to their access to social buffers (Gaymana et al., 2014; Meyer et al., 2004; Roxburgh & Bosich, 2015). Social buffers are anything that would help an individual cope with psychological distress, including family, friends, and positive coping mechanisms (Gaymana et al., 2014; Meyer et al., 2004; Roxburgh & Bosich, 2015). These differences have been associated with more access to positive coping mechanisms, like sports, and higher SES individuals may be more effective in understanding their emotions and using positive coping mechanisms (Gaymana et al., 2014). Having a lower SES has been related to higher rates of morbidity and mortality due to mental health issues compared to those with a higher SES (Meyer et al., 2004). This is thought to be influenced by factors like unsafe neighborhoods, lack of access to resources, and low self-esteem due to poverty (Meyer et al., 2004). The research also suggests that wealth has a significant relationship with mental health; meaning that as a person moves up in SES, they are more likely to see improvement in their mental health, though the reasoning behind this improvement is unclear (Mossakowski, 2008). While the research has looked at social buffers that may differ based on SES, there has been no evidence to suggest that individuals of a higher SES have more access to buffers or social support than those who are of a lower SES (Gaymana et al., 2014).

There is evidence to suggest that poverty has long lasting effects on an individual's mental health, regardless of whether an individual moves out of poverty. Studies have found that childhood poverty is related to psychopathology and poor self-concept throughout the life span, as well as episodes of extreme psychological distress and symptoms of depression (McLeod &

Shanahan, 1993; Mossakowski, 2008). McLeod and Shanahan (1993) found that the length of time an individual spent in poverty as a minor was related to their long-term mental health, regardless of their current socioeconomic status. There is also evidence to support the notion that childhood SES is related to the access and the quantity of psychosocial resources that an individual had access to throughout their life, regardless of whether they experienced a change in SES during their life (Beatty et al., 2011). Research has also suggested that the impacts of poverty on an individual's mental health is not buffered by any other factors (McLeod & Shanahan, 1993).

Low SES has a profound effect on an individual's mental health throughout their life. The mental healthcare system needs to be rearranged so that it can serve a population that is at a greater risk of having poor mental health throughout their lifetime.

Racial/Ethnic Differences in Mental Healthcare

Eack and Newhill (2012) found that many minorities receive and seek mental healthcare much less often than their majority counterparts, and if they do receive care, it is usually of a poorer quality. It has been found that individuals that belong to a racial or ethnic minority group will be more likely to receive inadequate care even when they are suffering from the same symptoms and have the same diagnosis as their majority counterparts (De Haan et al., 2012). Research evidence has revealed that many racial and ethnic minority individuals receive emergency mental healthcare more often, are given more injectable medications, are less likely to receive adequate follow ups on their mental health, and are less likely to return to work after a severe mental health crisis (Eack & Newhill, 2012). Several researchers have uncovered that even with proper care, individuals who belong to minority groups often do not report that their symptoms improve after care, and they tend to have higher rates of suicidal ideation after care

than they did beforehand (Eack & Newhill, 2012; Tobler et al., 2013). It has been hypothesized

that this phenomenon can be explained using social stress theory, which states that societal stress

and pressures can be detrimental to an individual and thus cause an individual to exhibit more

mental health issues throughout their lifetime, when compared to if they had not experienced any

of these stressors at all (Mossakowski, 2008). Some examples of stressors that may plague

minorities include poverty and racism (Mossakowski, 2008).

　　　While the differences in mental healthcare based on race can be alarming, there has been

a large amount of research that has been dedicated to looking at why minority individuals with

mental health issues receive care less often and why that care is not comparable to the care that

their majority counterparts receive. Some of the research has shown that minority individuals

receive poorer quality care because there are not adequate mental healthcare resources within

their community (Eack & Newhill, 2012). This disparity in access discourages most individuals

from seeking care because it is out of their reach and they feel like it would not be beneficial to

them to seek help when it is possible that they may not be able to talk about issues that are

specific to their minority status (Eack & Newhill, 2012). Other studies have found that the reason

why many minorities may not be actively seeking care is because their culture may emphasize

social support, and thus it may be unacceptable for them to receive care without talking about

their issues with members of their own community first (Beatty et al., 2011). Some examples of

social support that have been observed in minority communities include fictive kin, church

leaders, community activists, and family members (Roxburgh & Bosich, 2015).

　　　There are plenty of disparities that occur in the mental healthcare system based on race;

however, there is no clear indication that race alone is the reason for these differences. While

research has been done on how race interacts with other factors in affecting the efficiency of the

mental healthcare system, there have been no conclusive data on the relationship between these factors. To completely understand where improvement is needed in the mental healthcare system, there still needs to be research that looks at how a variety of variables intersect to identify where disparities occur and how they can be fixed.

While my current study is closely aligned with much of the previous research in terms of the demographics that are being examined, I investigated the intersectionality of some of the variables, as well as adding a component of religiosity and location and how these factors may also impact mental health and mental healthcare. Whereas much of the previous research has been conducted using a meta-analysis design, my research relied on self-report data that were collected using an online survey. I also collected data about attitudes toward mental health and mental healthcare to assess how individuals' attitudes may vary based on their demographics. I also collected data on an individual's access to mental healthcare and how this varies based on demographics as well.

One of the aims of my research was to determine which variables are associated with an individual's attitudes toward mental health. The variables included race/ethnicity, gender identity, and SES. Furthermore, I examined a similar relationship when it came to an individual's attitudes about mental healthcare and access to mental healthcare and how these relationships differ based on age, religiosity, and location.

My study was conducted using an online survey that was created with Qualtrics. The survey was shared on a variety of social media platforms and the Lindenwood Participant Pool's Sona Systems website. My data was analyzed using SPSS.

Participants

The intended size of the sample for this study was 300 or more participants. The only restriction to participation was age. Only the data of participants who were 18 years of age or older were included in the analysis; any data from a participant under 18 years of age was not included in the final analysis. Other than age, there were no specific inclusion criteria, as I was looking to reach people from a variety of demographics. A total of 132 participants took the online survey; however, X participants' data were thrown out because they were either under the age of 18 or the participant gave partial data that could not be used. There were 112 participants who were recruited using Sona Systems, which is the software used by the Lindenwood Participant Pool (LPP). The LPP is a resource on Lindenwood's campus which allows researchers, regardless of their affiliation with Lindenwood, to recruit participants who are enrolled in eligible classes in exchange for extra credit in those classes. The participants who were recruited through the LPP earned one extra credit point toward an eligible class of their choosing for participating. Due to the pandemic caused by COVID-19, after March 16th, 2020 participants who were members of the LPP were granted two extra credit points for their participation in my study. The other 20 participants were recruited through online social media platforms. These platforms included Instagram, Twitter, Facebook, Snapchat, and Reddit.

The makeup of the sample, in terms of gender identity, included 20 men, 93 women, and 2 TGNC individuals. The racial/ethnic configuration of the study was 77.4% White, 6% Black, .008% Asian, 8.7% Latinx, 0% Native American, 0% Middle Eastern, .008% Native Hawaiian or Pacific Islander, 6% Multiracial and .003% identified as "Other." The self-reported religiosity was moderately religious ($M = 45.29$, $SD = 32.75$) with 0 being not very religious and 100 being very religious. The age range of the participants was 18 - 41 years old. The average participant in

the study was in the middle class and lived in a suburban community. The study was approved

by both the Psychology Program Scientific Review Committee and the Lindenwood Institutional

Review Board (IRB) before it was distributed on to Sona Systems for the LPP or on Reddit,

Instagram, Twitter, Snapchat, and Facebook where participants could access it.

Materials

The survey was created on Qualtrics, an online survey creation website the survey was

compiled of a total of 17 questions with items taken from four different measures. The measures

used included the Attitudes to and Stereotypes of Mental Health Measure (Aromma et al., 2011),

the Knowledge, Attitudes, and Beliefs about Mental Illness Questionnaire (Bener & Ghuloum,

2010), the Mental Health Literacy Measure (Jung et al., 2006), and the Mental Illness Beliefs

Measure (Norman et al., 2012), as well as items I created for this study. The items on the survey

assessed attitudes about mental health and mental healthcare, an individual's access to mental

healthcare, and demographics that included: annual household income, race/ethnicity, gender

identity, age, religiosity, and self-reported description of the area in which the participant lives

(see Appendix A). The study also included an informed consent statement that was the first

question on the survey; I created the document from a template provided to all Lindenwood

researchers by the Lindenwood IRB. The consent form consisted of the name and contact

information of the principal investigator, the faculty advisor, and the Lindenwood IRB director,

the purpose of the study, and long it would take to complete the study. The consent form also

notified participants that if they were members of the LPP they were notified that they would

receive two LPP credits for their participation, regardless of whether they completed the study,

and the participants' right to end the survey at any time. At the end of the survey, there was a

debriefing statement that included the purpose of the study, contact information for the principal

investigator and the faculty advisor, and information about where participants could find mental

healthcare if they or someone they know needed it. I posted an anonymous link to my study on

Qualtrics to the LPP's Sona System software with, and a description and brief abstract was

posted and made available to potential participants by the office (see Appendix B). The survey

was also posted on to Reddit, Snapchat, Twitter, Instagram, and Facebook using an anonymous

link, which was accompanied by a prewritten prompt which told participants about the study, my

university affiliation and the class the study was designed for (see Appendix C). The study was

close on April 15th, 2020. The data were then analyzed using SPSS.

Attitudes to and Stereotypes of Mental Health Measure

The items that I used from the Attitudes to and Stereotypes of Mental Health (Aromma

et al., 2011; see Appendix D) were items 5, 9, 13, and 14, which address an individual's attitudes

about mental health and mental healthcare. I decided to include item 5 because it asked about an

individual's attitudes towards a person suffering from mental illness and their behaviors

(Aromma et al., 2011). When I included this item in the current survey, I changed the word

patient to individuals because I thought that the use of the word patient may bias the participant's

responses because it might have implied that the person was committed to a psychiatric facility. I

elected to include item 9 because it asked about an individual's attitudes about the mental

healthcare system. I edited this question because it asked about healthcare professionals in

general, so in my study it says healthcare providers. This was done so that people do not get

them confused with mental healthcare professionals who fit underneath the more general term,

given that the study is about mental health and the mental healthcare system. I picked item 13 to

be a question in my study because it assessed a participant's attitudes about mental healthcare

and specifically about their attitudes toward psychotropic drugs as treatment (Aromma et al.,

2011). I changed this question because in the original survey it asked about antidepressants, which was much too specific for the scope of this study, so it was changed to mental health medications to be more general and easier for the average person to understand. I also included item 14 in my study because it addressed an individual's attitude toward mental healthcare (Aromma et al., 2011). I slightly edited this item because it only asked about community mental healthcare. I wanted participants to compare community healthcare to the alternative which is institutionalized mental healthcare.

All items used were also changed so that they could be assessed using a 5-point Likert scale. The rest of the items in this measure were excluded because the items were repeated in another measure or they did not fit the scope of the study.

Knowledge, Attitudes, and Beliefs about Mental Illness Questionnaire

The items that were included from the Knowledge, Attitudes, and Beliefs about Mental Illness Questionnaire (Bener & Ghuloum, 2010; see Appendix E) were items 4, 5, 6, 12, 20, 21, 22, and 24. Items 4, 5, and 6 addressed an individual's attitudes about mental health, particularly the causes of mental health and were included in the present study (Bener & Ghuloum, 2010). I combined these three items into one because they were similar, and it helped shorten the length of the survey overall, which may have impacted the completion rate of the study. Item 12 was included because it addressed an individual's attitudes about mental healthcare, specifically mental healthcare provided by mental health professionals (Bener & Ghuloum, 2010). When it was included in the current study, I edited it to say community healer instead of traditional healer, because I did not think that this was something that was applicable to American culture, thus the term community healer was a better fit. I included items 21 and 22 because they assessed a person's attitudes toward mental illness by asking if an individual would have an

interpersonal relationship with someone who suffered from a mental illness (Bener & Ghuloum,

2010). I bundled these items into one question because it seemed redundant to ask about the

same concept in two separate ways. Therefore, in the current study the question asks if the

participant would be in a relationship of any kind with someone who is mentally ill. I decided to

include item 24 because it asked about an individual's attitudes towards mental illness and

people who suffer from mental illnesses (Bener & Ghuloum, 2010). I changed this item in the

current study because it asked if an individual were afraid of living next to someone who has a

mental illness. Instead the item in my study asked if an individual would feel comfortable living

next to someone with mental illness. I felt as though it may have been possible for someone to be

uncomfortable with living next to someone with a mental illness, and that discomfort does not

necessarily cause fear, so by reframing the question, I may have received a greater variety of

unbiased responses than I would have if I had used the original question.

     Every item that I included from this measure was changed so that it could be answered

on a 5-point Likert scale. The rest of the items in this measure were not included because they

were repeats of a question taken from another measure or because they did not fit in well with

the focus of this study.

Mental Health Literacy Measure

     The items from the Mental Health Literacy Measure (Jung et al., 2016; see Appendix F)

that were included in the present study were items 8, 13, 18, 19, 23, 25 and 26. I decided to select

item 8 for the study because it asked about attitudes about mental healthcare, specifically

psychotropic medications. I edited this question because I found it very vague and that it could

have been confusing, so in the present study it is worded in a way that is less complex and

confusing to the average person. I selected item 13 to be in the study because it assessed an

individual's attitudes about mental healthcare and their religious beliefs. I modified this question

because it only asked about highly religious individuals and not everyone who participated in the

study would consider themselves as highly religious, so the term highly religious was removed

from the question. I decided to include item 18 in the study because it addressed an individual's

attitudes toward mental illnesses and their causes (Jung et al., 2016). I altered this question to fit

my study by making the question more general instead of being very specific like it was

presented in the original study. I elected for item 19 to be included in the study because it asked

about an individual's attitudes toward mental healthcare and treatment. I modified this item in

my study because the wording was confusing and would not have been compatible with all forms

of technology that could have been used to take this survey on the Qualtrics site.

I decided to include item 23 because it asked about mental healthcare access in an

individual's community (Jung et al., 2016). I rephrased the item in the current study because

many people would have responded to this item in a socially desirable way because there were

only two options; by adding more options and editing the item slightly the question was less

likely to contain socially desirable answers instead of honest answers. I included item 24 because

it assessed access to mental healthcare, as well as if the participant had any idea about other

resources outside of their community where they could receive mental healthcare (Jung et al.,

2016). I revised this item in the current study because it was very likely that participants may

have answered 'yes' because it was the socially acceptable answer and not because they knew

the information. The question now asks whether the participant's community has a list of these

resources that are available to the public, and there were more ways for the participant to respond

to that question. I chose item 25 to be included in the study because it asked about an

individual's access to mental healthcare in their community and whether they knew how to get

those resources (Jung et al., 2016). I edited this question in the current study because it was very vague and did not really relate back to the participant's own community, so it was changed to be clearer and address the participant's community. I picked item 26 to be included in the present study as well; I modified this item because the question was somewhat redundant and rephrased what was said in item 23 (Jung et al., 2016). The item now asks about crisis teams in a person's community.

I changed all items, apart from items 23-26, so that I was able to assess them on a 5-point Likert scale. I changed items 23-26 so that they were multiple choice items with 3 responses for the participant to choose from. I excluded all other items in this measure because they did not fit the scope of my study.

Mental Illness Beliefs Measure

The current study used several items from the Mental Illness Beliefs Measure (Norman et al., 2012; see Appendix G), these include item 6, 8, 14, 16, and 17 of the 23 items on the measure. The reason that I decided to include item 6 was because it asked about an individual's attitudes about mental health (Norman et al., 2012). I changed the item in the present study because there was a blank left for a specific mental illness, but instead that blank was filled with mental illnesses in general. I opted to include item 8 in the study because it assessed an individual's attitude about mental health and people who suffer from mental illnesses. I edited this item in the present study because in the original study the wording was insensitive to those who suffer from mental illnesses, and it was also meant to ask about a specific mental illness: so now it is more sensitive and appropriate, as well as more general than it was in the previous measure. I chose to include item 14 from this measure in the study because it addressed an individual's attitudes about mental illness (Norman et al., 2012). I adapted the question to fit the

scope of the present study, because like several other items from this measure, it was too general

and had to be broadened to be able to address attitudes about mental illness in general and

because it also compared those who are mentally ill to 'normal people', thus the question was

changed to say 'people without mental illnesses' to be more bias-free. I selected items 16 and 17

for this study because they addressed an individual's attitudes about mental illnesses (Norman et

al., 2012). I decided to alter this question in my study because it made more sense to combine the

two questions because they asked similar things.

All items selected from this measure were altered so that I was able to analyze the data

using a 5-point Likert scale. The other items in this measure were not included because they

were not a good fit for the scope of this study.

Measures

The variables that were measured in this study include attitudes toward mental health,

attitudes toward mental healthcare, access to mental healthcare, race/ethnicity, gender identity,

socioeconomic status, age, location, and religiosity. All variables were measured using different

scales that are described below.

Attitudes Toward Mental Health

Attitudes toward mental healthcare was assessed using two questions. The questions were

numbers 2 and 3 on the survey, consisting of a total of 18 items. These items were rated on a

Likert scale (5 = *extremely positive attitude*, 2 = *extremely negative attitude*, and 1 = *a lack of

attitude*). Participants were then given a total score out of 90 possible points.

Attitudes Toward Mental Healthcare

Attitudes toward mental healthcare was measured using two questions. These were

questions 4 and 5, consisting of a total of 19 items. These items were scored on a Likert scale (5

= *extremely positive attitude*, 2 = *extremely negative attitude*, and 1 = *a lack of attitude*).

Participants were then given a total out of 95 possible points.

Access to Mental Healthcare

Access to mental healthcare was measured using five questions. These were questions 6 through 10. All five questions were multiple choice and had three possible answers for participants to choose from. The possible answers were "yes," "no," and "I am not sure." A "yes" answer got a score of 2, meaning strong access. A "no" received a score of 1, meaning weak access. An answer of "I am not sure" received a score of 0 because there was a lack of knowledge. Participants received an overall score out of 10.

Demographics

Race/Ethnicity. Race/Ethnicity was analyzed using one question, which was question 15 on the survey. The participant was able to select their race or ethnicity from this list, which would either put them in the category "minority" if they choose anything other than European American or 'majority" if they choose European American.

Religiosity. Religiosity was analyzed using a sliding scale where individuals could slide a bar to show how religious they were. The scale started with 0, which is not very religious, and ended with a 100, which is very religious. Based on their numerical value, participants were put into three different categories. Answers from 0 to 49 were grouped into the not very religious group. Answers from 50-75 were members of the moderately religious group. Answers from 76-100 were grouped into the very religious category.

Age. Age was measured using an open-ended question. Participants inserted their age in years into a textbox.

Gender Identity. Gender identity was measured using a multiple-choice question. The options were "Male," "Female," and "Other." If an individual chose "Other," they were invited to write their gender identity in a textbox.

Location. Location was measured using a multiple-choice question. The answers that a participant could choose from were "Urban," "Suburban," and "Rural."

Socioeconomic status. Socioeconomic status was measured using a multiple-choice question. Participants were able to select a range that their annual household income fell in between; the options were under $20,000, $20,000-$44,999, $45,000-$139,999, $140,000-$199,999, and $200,000+. Those who answered under $20,000 and $20,000-44,999 were considered low income. Anyone who answered $45,000-$139,999 were considered middle class. Those who answered $140,000-$199,999 and $200,000+ were considered upper class.

Analyses

The main analyses that were conducted for this study were analysis of variance (ANOVA) and *t*-tests. I used *t*-tests to see the differences between attitudes for about mental health, attitudes about mental healthcare, and access to mental health based on an individual's gender identity and race/ethnicity. Gender identity was broken into two groups, with one group being men and the other being women. I broke race/ethnicity into two groups as well, with White and European Americans being in the majority group and anyone who identified as something other than White or European American in the minority group. I conducted ANOVAs to see whether there was a difference in attitudes toward mental health, attitudes about mental healthcare, and access to mental healthcare vary based on socioeconomic status and location. Several Pearson's *r* correlations were also conducted to analyze the relationship between attitudes about mental health and age and religiosity, the relationship between attitudes about

mental healthcare and age and religiosity, and the relationship between access to mental

healthcare and age.

Results

I hypothesized that attitudes toward mental health and mental healthcare would vary based

on an individuals' gender identity, race/ethnicity, location, and socioeconomic status. I also

hypothesized that an individuals' attitudes toward mental health and mental healthcare would have

a relationship with their age and religiosity. My final hypotheses were that there would be a

relationship between an individual's age and their access to mental healthcare and that mental

healthcare would vary based on an individual's location and socioeconomic status.

Attitudes Toward Mental Health

I hypothesized that there would be a relationship between attitudes toward mental health,

age and religiosity. I also hypothesized that there would be difference in attitudes about mental

health based on their gender identity, race/ethnicity, location, and socioeconomic status. I

conducted an independent samples t-test to see if attitudes towards mental health varies based on

gender identity. There was not a significant difference between men ($M = 48.05$, $SD = 4.11$) and

women ($M = 48.67$, $SD = 4.70$); $t(111) = -.522$, $p = .582$. There was no evidence to support the

notion that attitudes toward mental health vary based on gender identity. I also ran an

independent samples t-test to explore possible differences in attitudes toward mental health based

on race/ethnicity. There was/was not a significant difference between the majority group ($M =$

48.85, $SD = 4.23$) and the minority group ($M = 47.65$, $SD = 5.53$); $t(113) = 1.183$, $p = .239$. I did

not find evidence to support the notion that attitudes toward mental health vary based on

race/ethnicity.

I used a one-way ANOVA to identify if there was a difference in attitudes toward mental health based on location. There was/was not a significant difference between attitudes based on location. $F(2, 112) = 2.134$, $p = .123$. Post hoc comparisons revealed that there was a statistically significant difference in attitudes toward mental health between those who lived in rural and those who lived in suburban communities.

I conducted a one-way ANOVA to see if there was a difference in attitudes about mental health based on an individual's socioeconomic status. $F(5, 108) = 1.283$, $p = .277$. Post hoc comparisons revealed that there was a near significant difference between individuals who said that their annual family household income was $45,000-139,999 and $150,000-199,999 where $p = .052$. I also found that there was a difference that was approaching statistical significance between individuals who had an annual family income of less than $20,000 and $45,000-139,999 with a p-value of $p = .075$.

I used a Pearson's r correlation to explore the relationship between age and an individual's attitudes toward mental health. Among the participants in this study, attitudes toward mental health and age had a weak, positive, not statistically significant correlation, $r(113) = .034$, $p = .718$. I conducted another Pearson's r correlation to evaluate the relationship between an individual's level of religiosity and their attitudes toward mental health. The analysis showed that there was a weak positive, but not statistically significant relationship between attitudes about mental healthcare and their level of religiosity $r(97) = .011$, $p = 912$.

Attitudes Toward Mental Healthcare

My hypotheses were that there would be differences in attitudes toward mental healthcare based on gender identity, race/ethnicity, location, and socioeconomic status. I also hypothesized that there would be a relationship between an individual's age and level of religiosity and their

attitudes toward mental healthcare. I ran an independent samples *t*-test to find out if there were

any variations in attitudes toward mental healthcare based on gender identity. There were not any

significant variations in attitudes toward mental healthcare between men (*M* = 63.6, *SD* = 7.82)

and women (*M* = 64.96, *SD* = 9.7); *t*(111) = -.590, *p* = .556. There was not any evidence to

support the claim that there were differences in attitudes about mental healthcare based on

gender identity. I used an independent samples *t*-test to explore possible differences in attitudes

about mental healthcare based on race/ethnicity. There were significant variations in attitudes

toward mental health for the majority group (*M* = 66.21, *SD* = 8.92) and the minority group (*M* =

60.00, *SD* = 9.2); *t*(113) = 3.101, *p* = .002.

I conducted a one-way ANOVA to investigate the possibility of there being differences in

attitudes toward mental healthcare based on location. *F*(2,112) = 1.669, *p* = .193. A post hoc

comparison revealed that there were no individual significant differences between rural, urban,

or suburban communities and their attitudes toward mental healthcare.

I ran a one-way ANOVA to find out if there were any differences in attitudes about

mental healthcare based on an individual's socioeconomic status, *F*(5, 108) = 1.920, *p* = .097. I

conducted a post hoc comparison and it revealed that there was a statistically significant

difference in mental healthcare attitudes for individuals whose families made less than $20,000

and those who made $45,000-139,999 a year with a p-value of *p* = .011. There was also a

statistically significant difference between those whose annual family income was below

$20,000 a year and those who made $200,000+ a year, where *p* = .007. I also found a difference

that is close to being statistically significant between those whose annual family income is less

than $20,000 a year and those who make between $20,000-44,999 with a p-value of *p* = .064.

Another emerging significance difference was found between those whose annual family income was less than \$20,000 and those who made \$140,000-149,999, where the p-value was $p = .094$.

I used a Pearson's r correlation to explore the relationship between an individual's age and their attitudes about mental healthcare. The correlational analysis showed that there is a weak, negative, statistically insignificant relationship between age and an individual's attitudes about mental healthcare, $r(113) = -.060$, $p = .528$. I conducted a Pearson's r correlation to determine if there was a relationship between an individual's attitudes toward mental healthcare and their level of religiosity. Among participants in this study there was a weak, negative, statistically significant relationship between attitudes toward mental healthcare and their level of religiosity, $r(97) = -.211$, $p = .038$.

Access to Mental Healthcare

I hypothesized that there would be differences in access to mental healthcare based on race/ethnicity, socioeconomic status, and location. I also hypothesized that an individual's access to mental healthcare would be related to their age. I used an independent samples t-test to see if there were any differences between an individual's access to mental healthcare based on their race/ethnicity. There was not a significant variation of access to mental healthcare between the majority group ($M = 8.49$, $SD = 2.04$) and the minority group ($M = 9.11$, $SD = 2.1$); $t(113) = -1.353$, $p = .179$.

I ran a one-way ANOVA to assess possible differences in access to mental healthcare based on an individual's location, $F(2 , 112) = 2.03$, $p = .626$. Post hoc comparisons revealed that there were no statistically significant differences in access to mental healthcare based on an individual's location.

I ran a one-way ANOVA to analyze the possible differences in access to mental healthcare due to variations in socioeconomic status, $F(5, 108) = 1.394$, $p = .232$. A post hoc comparison revealed that there was a statistically significant difference between those whose family household income was $20,000-44,999 and those who made $200,000+ where the p-value was $p = .033$. I also found that there was a statistically significant difference between those who had an annual family household income of $45,000-139,999 and those with an annual family household income of $200,000+ with a p-value, $p = .022$.

I used a Pearson's r correlation to explore the relationship between an individual's age and their access to mental healthcare. There was a positive, weak, not statistically significant relationship between age and an individual's access to mental healthcare, $r(113) = .119$, $p = .208$.

Discussion

There was some support for my hypotheses, I found that there was a difference in attitudes about mental health based on an individual's location, specifically between rural and urban communities. This difference may be caused by the rise in suicide rates starting in the 1970's and suburban communities have disproportionately affected by this increase (Ford, et al., 1979). Therefore, individuals in suburban communities may have more positive attitudes about mental health because it is present in their everyday lives, even though the suicide rates in their community are declining (Stein et al, 2015). I discovered that there is a relationship between religiosity and an individual's attitudes toward mental healthcare. I believe that this finding may be caused by the notion that people who are religious may have more social support than individuals who are not as religious. Individuals who are very religious may also be encouraged to turn to their church leaders and God when they are in crisis instead of going to see out mental healthcare, which could possibly explain the relationship between attitudes and religiosity. I

found some difference in attitudes about mental health based on socioeconomic status, particularly between those who are middle class and upper middle class, as well as those who are below the poverty line and those who are middle class. These differences may be because as individuals move up the socioeconomic ladder, they may receive more education about mental health which may have an impact on their attitudes.

During my research I uncovered that there was a statistically significant difference in attitudes in mental healthcare based on an individual's race/ethnicity. This difference may be caused by the predatory treatment that some minority communities have faced in the past (Ojeda & Bergstresser, 2008). Another potential cause of this difference may be that mental health professionals in minority communities are overworked, therefore individuals in these communities are not getting the best care possible and that is what is influencing their attitudes. Through my research, I also discovered that there were some differences in attitudes toward mental healthcare based on socioeconomic status, with the main differences being between individuals who are of a lower social class, those who are middle class, and those who are upper class. I believe that these differences may be caused by overworked mental healthcare professionals in impoverished communities. Therefore, the attitudes of individuals in these communities may be more negative because the care they are receiving is not as client focused or efficient as it is in more affluent communities.

The last thing that my research uncovered was that there was a difference between access to mental healthcare based on socioeconomic status. The differences are the most significant are those between individuals who are lower class, those who are middle class, and those who are affluent. These differences may be caused by differences in health insurance coverage. Individuals who are of a lower or middle class may not be able to access mental healthcare as

much or as often as their affluent counterparts because their health insurance will not cover it and

they cannot pay for it out of pocket.

One of the strengths of my research study was that I was able to collect self-report data,

which allowed me to better assess an individual's access to mental healthcare and attitudes about

mental health and healthcare than I would have been able to gather if I used the meta-analysis

method that was used in previous research. I believe that another strength of using self-report

data, in an online format, was that I was able to reach more people and collect more data than I

would have than if I would have handed out physical surveys or conducted interviews in a lab.

The largest weakness in my study was that I did not diversify where I posted my research study,

so I may have gotten different results if I would have posted on a wider variety of social media

platforms. If I was going to do this study again or if it were to be repeated, I would recommend

that there either be an interview or short answer component added to the study. I think that

adding this to the study will provide more depth and provide a greater understanding of what the

thinking is behind some of these attitudes. I would also recommend that future research looks at

more demographics such as sexual orientation and political affiliation.

I think that my research provides valuable information to professionals across the social

sciences. Applied sociologists can use this data to go into a variety of communities and assess

the mental healthcare resources that are available. They can report how individuals in these

communities feel about these resources and provide valuable feedback to psychologists and other

mental healthcare professionals on how to provide better care in these communities.

Psychologists can use this information to seek out additional training on cultural sensitivity,

which could help bridge the gap between mental healthcare professionals and their clients. I also

believe that psychologists can attempt to work in some of these low-income communities to

ensure there are enough professionals to provide care in each area without having professionals experiencing burn out. Psychologists also have a duty to educate the public on mental health and mental healthcare, so perhaps professionals can work on doing community outreach in the communities that need it the most.

While this research is a step in the right direction, there is still a significant amount of work that needs to be done to ensure that the mental healthcare system in the United States is equitable and serves the entire population. Continuing research in this field would provide more insight on where the mental healthcare system is not meeting the needs or standards set by those it is supposed to serve. With more research in this field, psychologists and other mental healthcare professionals will be able to better serve and educate their clients and the public.

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Appendix A

Attitudes about Mental Health, Mental Healthcare, and Mental Healthcare Access Survey

Attitudes about Mental Health, Mental Healthcare, and Mental Healthcare Access

Start of Block: Informed Consent

Q1 Survey Research Information Sheet

You are being asked to participate in a survey conducted by Mariya Gaither, under the supervision of Dr. Michiko Nohara-LeClair at Lindenwood University. We are doing this study to gain information on attitudes about mental health and mental healthcare. The survey also includes questions that asks about access to mental healthcare and other resources in your community. There will also be several demographic questions at the end of the survey. It will take about 15 minutes to complete this survey.

 Your participation is voluntary. You may choose not to participate or withdraw at any time by simply not completing the survey or closing the browser window.

There are no risks from participating in this project. We will not collect any information that may identify you. There are no direct benefits for you participating in this study.

If you are in the LPP, you will receive two extra credit points in the course for which you signed up for the LPP. You will receive extra credit simply for completing this information sheet. You are free to withdraw your participation at any time without penalty. Participants who are not part of the LPP will receive no compensation beyond the possible benefits listed above. However, your participation is an opportunity to contribute to psychological science.

WHO CAN I CONTACT WITH QUESTIONS? If you have concerns or complaints about this project, please use the following contact information:
 Mariya Gaither: MUG221@Lindenwood.edu

Dr. Michiko Nohara-LeClair; Mnohara-leclair@Lindenwood.edu

If you have questions about your rights as a participant or concerns about the project and wish to

talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

By clicking the link below, you confirm that you have read this form and decided that you will participate in the project described above. You understand the purpose of the study, what you will be required to do, and the risks involved. You understand that you can discontinue participation at any time by simply not completing the survey. Your consent also indicates that you are at least 18 years of age, or that you have parental consent on file with the Lindenwood Participant Pool.

You can withdraw from this study at any time by simply closing the browser window. Please feel free to print a copy of this information sheet.

- I consent (1)
- I do not consent (2)

End of Block: Informed Consent

Start of Block: Mental Health Attitudes

Q2 Please respond by indicating how much you agree or disagree with each statement.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Individuals suffering from mental illnesses are unpredictable. (1)	●	●	●	●	●
It is impossible for someone to recover from a serious mental health crisis. (2)	●	●	●	●	●
I do not feel comfortable around people who have mental illnesses. (3)	●	●	●	●	●

There are many similarities between people without mental illnesses and those who have mental illnesses. (4)	●	●	●	●	●
Most people with mental health issues use their mental health as an excuse. (5)	●	●	●	●	●
People with mental health issues can function well in our society. (6)	●	●	●	●	●
If more people with mental health issues were institutionalized, there would be less violent crime. (7)	●	●	●	●	●
It is easy to tell if someone has a mental illness. (8)	●	●	●	●	●
If someone has a mental illness, they should not tell anyone because they will be shunned. (9)	●	●	●	●	●

Taking care of your mental health is an important part of your overall well-being. (10)	●	●	●	●	●
Mental illnesses are a result of bad parenting. (11)	●	●	●	●	●
Very few people in our society are actually mentally ill. (12)	●	●	●	●	●
Everyone with a mental illness is rash. (13)	●	●	●	●	●
Everyone should take steps to take care of their mental health no matter how small. (14)	●	●	●	●	●
Mental health issues can arise due to a variety of reasons such as stress from daily life, traumatic events, or brain injuries. (15)	●	●	●	●	●

Q3 Please respond by indicating how much you agree or disagree with each statement.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I believe my family would support me if I had a mental illness. (1)	●	●	●	●	●
I would be comfortable living next to someone who has a mental illness. (2)	●	●	●	●	●
I would be comfortable being in a relationship, of any kind, with someone who has a mental illness (3)	●	●	●	●	●

End of Block: Mental Health Attitudes

Start of Block: Mental Healthcare Attitudes

Q4 Please respond by indicating how much you agree or disagree with each statement.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
A religious leader through prayer and other religious activities can effectively treat mental health. (1)	●	●	●	●	●

Mental healthcare providers do not care about their patients. (2)	●	●	●	●	●
Mental healthcare providers do not have their patients' best interests in mind. (3)	●	●	●	●	●
Therapy is not effective in helping people cope with their mental health issues. (4)	●	●	●	●	●
People who seek mental healthcare are forced to undergo treatment that they do not want. (5)	●	●	●	●	●
Mental health medications are often ineffective. (6)	●	●	●	●	●
Mental health medications have adverse side effects. (7)	●	●	●	●	●
Many mental health medications make mental health conditions worse. (8)	●	●	●	●	●

Many mental health issues will go away without any kind of mental health treatment. (9)	●	●	●	●	●
Society should invest more in community mental healthcare instead of institutional mental healthcare. (10)	●	●	●	●	●
Mental healthcare providers pass inaccurate judgements about their clients based on the client's group membership (race, gender, etc). (11)	●	●	●	●	●
Healthcare professionals (such as primary care physicians and nurses) are not capable of effectively treating mental illness. (12)	●	●	●	●	●
A community healer would be more	●	●	●	●	●

effective at treating mental illness than a mental healthcare professional. (13)					
Many people with mental illnesses would see improvement in their overall mental health without the help of mental healthcare professionals. (14)	●	●	●	●	●

Q5 Please respond by indicating how much you agree or disagree with each statement.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
If I were suffering from a mental illness, I would go to a mental healthcare professional for help. (1)	●	●	●	●	●
I believe that I could get rid of a mental illness through prayer and	●	●	●	●	●

spirituality. (2)					
I believe that mental healthcare does not work for most people with mental illness. (3)	●	●	●	●	●
I feel like there are very few mental healthcare providers who reflect my cultural background (age, race/ethnicity, religion, gender, etc.). (4)	●	●	●	●	●
I feel like many medications for mental illnesses cause more problems, instead of solving them. (5)	●	●	●	●	●

End of Block: Mental Healthcare Attitudes

Start of Block: Mental Healthcare Access

Q6 Is there a mental healthcare facility in your community?

- Yes (1)
- No (2)
- I do not know (3)

Skip To: Q7 If Is there a mental healthcare facility in your community? = Yes

Skip To: Q8 If Is there a mental healthcare facility in your community? = No
Skip To: Q8 If Is there a mental healthcare facility in your community? = I do not know

Q7 Are there enough mental healthcare facilities in your community given the size of your community?

- Yes (1)
- No (2)
- I am not sure (3)

Q8 Does your community have resources about where you could go to receive mental healthcare?

- Yes (1)
- No (2)
- I am not sure (3)

Q9 Does your community provide information about some anonymous resources that individuals could use to receive mental healthcare?

- Yes (1)
- No (2)
- I am not sure (3)

Q10 Is there a mental health crisis team in your community?

- Yes (1)
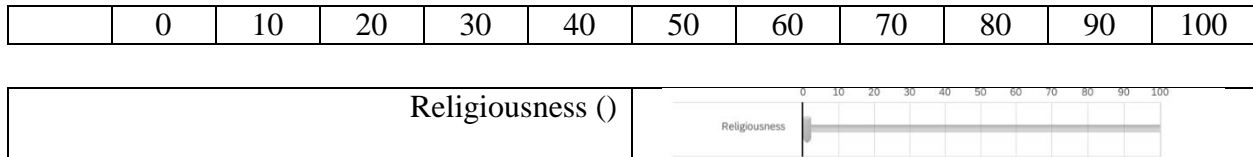- No (2)
- I am not sure (3)

End of Block: Mental Healthcare Access

Start of Block: Demographic Questions

Q11 How would you define the area in which you live?

- Rural (1)
- Suburban (2)
- Urban (3)

Q12 Please rate how religious you are, with 0 being not religious and 100 being very religious.

	0	10	20	30	40	50	60	70	80	90	100

Religiousness ()	

Q13 What is your gender identity?
- Male (1)
- Female (2)
- Other (3) _____

Q14 What is your age in years?

_____

Q15 What is your race/ ethnicity? Please select all that apply.
1. American Indian or Alaska Native- (1)
2. Asian (2)
3. Black or African American (3)
4. Hispanic, Latino, or Spanish Origin (4)
5. Middle Eastern (5)
6. Native Hawaiian or Other Pacific Islander (6)
7. White or European American (7)
8. Other (8) _____

Q16 What is your annual family household income?
- Less than $20,000 (1)
- $20,000-44,999 (2)
- $45,000-139,999 (3)
- $140,000-149,999 (4)
- $150,000-199,999 (5)
- $200,000+ (6)

End of Block: Demographic Questions

Start of Block: Thank you statement

Q17 Thank you for participating in my study. The purpose of this study was to see if there were any factors that affect an individual's attitudes about mental health, mental healthcare, and access to mental healthcare. This research is important because it will highlight differences, if any, in the way people feel about these topics and identifying where changes can be made to make the mental healthcare system equitable for everyone. If you have any questions about the study or you would like to know the outcome of the study, feel free to contact the principle investigator or the faculty advisor with questions.

If you or someone you know is suffering from mental health issues and is unaware of where they can go to get help, please utilize the following resources:

Substance Abuse and Mental Health Services Administration:

To find the nearest substance abuse or mental health treatment center near you, please click this link: https://findtreatment.samhsa.gov/locator

To find a referral for a mental health facility in your area, please call: 1-800-662-4357

National Suicide Prevention Lifeline:

If you are experiencing suicidal thoughts or are in extreme crisis, please call or text:
Phone number: 1-800-273-8255
Text line: Text MHA to 741-741

Child-Help USA for both child and adult abuse survivors:
If you are a survivor of any kind of abuse, please call: 1-800-273-8255
Principal Investigator: Mariya Gaither MUG221@lindenwood.edu
Faculty Advisor: Michiko Nohara-LeClair
Mnohara-leclair@lindenwood.edu

End of Block: Thank you statement

Appendix B

LPP Abstract and Description

Abstract: This is a brief 15-minute survey, which asks you about your attitudes about mental health, mental healthcare, your access to mental healthcare, and some demographic questions.

Description: The study asks about how individuals view mental health and how they feel about mental healthcare. It will ask participants about their knowledge about how to receive mental healthcare in their own communities and demographic questions, such as race/ethnicity, gender, and socioeconomic status.

Appendix C

Social Media Recruitment Paragraph

Hello, I am Mariya Gaither and I am currently a student at Lindenwood University. I am conducting a survey for my Advanced Research Methods class; the survey asks individuals about their attitudes about mental health and mental healthcare, their access to mental healthcare, as well as several demographic questions. The survey should only take about 15 minutes to complete. If you enjoy my survey, please feel free to share it so that other people may have the opportunity to participate. Thank you for your contribution to psychological science!

Appendix D

Attitudes to and Stereotypes of Mental Health Measure (Aromma et al., 2011)

1. People with depression have caused their problems themselves.2

2. Depression is a sign of failure.2

3. Depressed people should pull themselves together.2

4. Mental health problems are a sign of weakness and sensitivity.2

5. Depression is not a real disorder.2

6. Patients suffering from mental illnesses are unpredictable.2

7. If one tells about his/her mental problems, all friends will leave him/her.1

8. If the employer finds out that the employee is suffering from mental illness, the employment will be in jeopardy.1

9. The professionals in healthcare do not take mental problems seriously.1

10. Depression can be considered as a shameful and stigmatizing disease.2

11. It is difficult to talk with a person who suffers from mental illness.

12. Antidepressants are not addictive.2 Antidepressants have plenty of side effects.2

13. Society should invest more in community care instead of hospital care.2

14. Depression can't be treated.2

15. You don't recover from mental problems.2

<u>Note:</u> 1 Statements refer to perceived public stigma/stereotype awareness. 2 Statements refer to personal stigma/stereotype agreement. A four-point rating scale was used with the response alternatives: "strongly disagree", "disagree", "agree" and "strongly agree".

Appendix E

Knowledge, Attitudes, and Beliefs About Mental Illness Questionnaire (Bener & Ghuloum,

2010)

<u>**Knowledge and Beliefs**</u>

1. Do you think substance misuse like alcohol or drugs could result in mental illness?

2. Do you think mental illness is due to possession by evil spirits?

3. Do you think poverty can be the cause of mental illness?

4. Do you think brain disease can be the cause of mental illness?

5. Do you think mental illness can be punishment from God?

6. Do you think traumatic event or shock can be a cause of mental illness?

7. Do you think stress in daily life leads to mental illness?

8. Do you think genetic inheritance may be the cause of mental illness?

9. Do you think people with mental illness are mentally retarded?

10. Do you think people with mental illness can live in the community?

11. Do you think people with mental illness can work in regular jobs?

12. Do you think traditional healers can treat mental illness?

13. Do you think people with mental illness can be successfully treated with medication?

14. Do you think people with mental illness can be successfully treated using psychotherapy?

15. Do you think psychiatric medication will cause addiction?

16. Do you think people with mental illness are dangerous?

<u>**Attitudes**</u>

17. Would you visit a psychiatrist if you had emotional problems?

18. Would you visit a healer if you have emotional problems?

19. Are you afraid to have a conversation with someone with mental illness?

20. Are you willing to maintain a friendship with someone with mental illness?

21. Do you think that marriage can treat mental illness?

22. Are you willing to share a room with someone who has mental illness?

23. Are you ashamed to mention someone in your family who has mental illness?

24. Are you disturbed to work in your workplace with someone who has mental illness?

25. Are you afraid of someone with mental illness who is staying next door?

Appendix F

Mental Health Literacy Measure (Jung et al., 2006).

Knowledge-oriented Mental Health Literacy

1. Counseling is a helpful treatment for depression.

2. A person with schizophrenia may see things that are not really there.

3. Early diagnosis of a mental illness can improve chances of getting better.

4. Attending peer support groups helps recovery from mental illness.

5. Unexplained physical pain or fatigue can be a sign of depression.

6. Cognitive behavioral therapy can change the way a person thinks and reacts to stress.

7. A person with bipolar disorder may show a dramatic change in mood.

8. Taking prescribed medications for mental illness is effective.

9. When a person stops taking care of his or her appearance, it may be a sign of depression.

10. Drinking alcohol makes symptoms of mental illness worse.

11. A person with mental illness can receive treatment in a community setting.

12. A person with anxiety disorders has excessive anxiousness or fear.

Beliefs-oriented Mental Health Literacy

13. A highly religious/spiritual person does not develop mental illnesses.

14. Depression is a sign of personal weakness.

15. Mental illness is a short-term disorder.

16. Recovery from mental illness is mostly dependent on chance or fate.

17. A person with depression should not be asked if he or she has thoughts of suicide.

18. Poor parenting causes schizophrenia.

19. Mental illness will improve with time, even without treatment.

20. Recovering from a mental illness is the same as being cured.

21. A person can stop hoarding whenever he/she wants to.

Resource-oriented Mental Health Literacy

22. A person with depression will get better on his or her own without treatment.

23. I know where to go to receive mental health services.

24. I know how to get the number of a suicide prevention hotline.

25. I know where to get useful information about mental illness.

26. I know how to contact a mental health clinic in my area.

Note: Most items are rated using a five-point Likert scale (i.e., strongly disagree, disagree,

neutral, agree, and strongly agree) with the option of "I don't know." The response format for the

last four items measuring specific knowledge about mental health resources is "yes" or "no."

Appendix G

Mental Illness Beliefs Measure (Norman et al., 2012)

<u>Personal responsibility for illnesses</u>

- xxx results from a failure of self-control.

- Developing xxx has nothing to do with willpower and self-discipline.

- xxx does not result from a failure of self-control.

- xxx comes about when someone stops making the effort to deal with the challenges of

  life.

- People with xxx are personally responsible for becoming ill.

<u>Danger</u>

- People with xxx are dangerous.

- In recent years the number of crimes committed by people with xxx has been increasing.

- If all patients with xxx were admitted to locked wards, the number of violent crimes

  would be markedly reduced.

- People with schizophrenia do not commit brutal crimes.

- The symptoms of schizophrenia do not lead to violence.

<u>Continuity with normal experience</u>

- Given extreme circumstances many of us could show signs of xxx.

- Most of us from time to time show signs of xxx.

- Normal people do not have any of the signs of xxx.

- There is a lot of similarity between xxx and the experience of normal people.

<u>Social inappropriateness</u>

- It would be easy to interact with someone with xxx.

- People with xxx are appropriate in their behaviour when interacting with others.

- People with xxx often say rude and upsetting things.

- Someone with xxx is always able to engage in polite conversation.

- You can often be embarrassed by what someone with xxx says or does.

Prognosis

- Most people with xxx will completely recover.

- It is rare for someone with xxx to be completely cured.

- With modern treatment methods these days, many patients with xxx can be cured.

- Even with treatment, most people with xxx will long continue to show signs of their

  illness.

Note: Where there is an xxx the researcher has entered the name of a specific mental illness.

Relationships between Dichotomous Thinking and Other Cognitive Distortions

Nam Nguyen[§]

Introduction. *Both dichotomous thinking and other types of cognitive distortions have been found to be associated with various mental disorders and suicidality. There has been no known study that examines the relationship between dichotomous thinking and other cognitive distortions, nor known measure of cognitive distortions that integrates dichotomous thinking.* **Objective.** *This study aims to examine the relationships between dichotomous thinking and seven other cognitive distortions, namely jumping to conclusion, belief inflexibility, external attribution bias, overgeneralization, selective abstraction, catastrophizing, and personalization.* **Method.** *A survey was distributed online, integrating measures for dichotomous thinking from the Dichotomous Thinking Inventory (Oshio, 2009), jumping to conclusion, belief inflexibility, and external attribution bias from the Davos Assessment of Cognitive Biases Scale (van der Gaag et al., 2012), , overgeneralization, selective abstraction, catastrophizing, and personalization from the Cognitive Errors Questionnaire (Moss-Morris & Petrie, 1997).* **Results.** *Dichotomous thinking had significant positive correlations with jumping to conclusion, belief inflexibility, and external attribution. Age had a negative correlation with dichotomous thinking and belief inflexibility. Men and women did not differ significantly on cognitive distortions. Among demographic variables, age best predicted the degree of dichotomous thinking.* **Conclusions.** *Dichotomous thinking seemed to have co-occurred or co-developed with jumping to conclusion, belief inflexibility, and external attribution. Further investigations can focus on potential causal, mediating, or moderating relationships among these four constructs.*

Keywords: cognitive distortions, dichotomous thinking, jumping to conclusion, belief inflexibility, external attribution bias, overgeneralization, selective abstraction, catastrophizing, personalization.

Cognitive distortions – various types of biases and errors in thinking – have been found to have associations with mental disorders and suicidal tendency. Using the Inventory of Cognitive Distortions (Yurica, 2002), Jager-Hyman et al. (2014) reported that individuals who attempted suicide scored significantly higher than the control group in externalization of self-worth, fortune telling, labeling, and comparison to others.

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Several measures of various types of cognitive distortions have been developed. The Davos

Assessment of Cognitive Biases Scale (DACOBS; van der Gaag et al., 2012) measures both

cognitive biases and neurocognitive deficits that have been found to be associated with mental

disorders. Unlike cognitive biases, which are theorized as learned cognitive-behavioral habits

(Beck, 2011), neurocognitive deficits are cognitive limitations that are most likely caused by

physiological malfunctions of the nervous system (van der Gaag et al., 2012). The cognitive

distortions that the DACOBS measures are jumping to conclusions, belief inflexibility, external

attribution bias, and selective attention for threat. Jumping to conclusion, or data gathering bias,

is the tendency to arrive at conclusions or decisions based on first thoughts or intuition, without

much effort to analyze evidence and facts. Belief inflexibility is the unwillingness to change

conclusions, opinions, or decisions. External attribution is the tendency to blame others for any

misfortune to oneself. Selective attention for threat is the tendency to pay excessive attention to

or anticipate threats above other cues in the environment (van der Gaag et al., 2012). Because

selective attention for threats is a symptom peculiar to delusion-related mental disorders such as

schizophrenia (Lim et al., 2011; Moritz & Laudan, 2007; Phillips et al., 2000) with no record of

extensive occurrence in people without paranoid psychosis, I choose to exclude this cognitive

bias in the current study.

Moss-Morris and Petrie (1997) revised the Cognitive Errors Questionnaire (CEQ-R) to measure

four types of cognitive errors: overgeneralization, selective abstraction, catastrophizing, and

personalization. Overgeneralization is the tendency to make general assumptions based on

isolated instances. Selective abstraction is the tendency to focus on an isolated detail and makes

interpretation about that detail without taking context into account. Catastrophizing is the

tendency to interpret aversive events as disastrous and irreparable. Personalization is the

tendency to link oneself to external events. These constructs were measured in two themes:

General (i.e. relating to everyday life experiences) and Somatic (i.e. relating to individuals'

bodily experiences). Moss-Morris and Petrie had a depressed group, a chronic fatigue syndrome

group, a chronic pain group, and a healthy group take the questionnaire, and found that the

depressed group had a significantly higher score than the other three groups on the General

CEQ-R. The Somatic CEQ-R scores of the chronic pain and chronic fatigue syndrome groups

were significantly higher than that of the healthy group. Somatic CEQ-R had positive

relationships with focus on self and symptoms of chronic pain or chronic fatigue, while General

CEQ-R had positive correlations with depression and self-focusing, and a significant negative

correlation with self-esteem (Moss-Morris & Petrie, 1997).

One common type of cognitive distortions is dichotomous thinking – the tendency to think in

clear oppositions and duality (Oshio, 2012). Dichotomous thinking has various components and

manifests itself in different ways. The Dichotomous Thinking Inventory (DTI) constructed by

Oshio (2009) has three subscales, each of which represents a component of dichotomous

thinking. The first component is preference for dichotomy, which refers to the tendency towards

clarity and distinction and away from obscurity and ambiguity. The second subscale,

dichotomous belief, refers to the belief that everything can be divided into two categories, such

as black and white, good and evil, all or nothing, rather than accepting that certain things are

inseparable or interdependent. The third component, profit-and-loss thinking, refers to the

impulse to gain profits and avoid losses.

Dichotomous thinking has been found to have significant relationships with several mental

disorders. Measuring individuals on the DTI and various other tests, Oshio (2009, 2012) found

that total dichotomous thinking score had positive correlations with borderline personality

disorder, narcissistic personality disorder, and all types of personality disorders except for

schizotypal. Of the three components of DTI, preference for dichotomy had significant positive

correlations with clusters B and C of personality disorders; dichotomous belief had significant

positive relationships with all types of personality disorders, and profit-and-loss thinking had no

significant relationship with any personality disorder but avoidant (Oshio, 2012). Dichotomous

thinking was also identified as a potential mediating variable in the positive relationship between

depression and body mass index (Antoniou et al., 2017). Egan et al. (2007) found a significant

positive correlation between dichotomous thinking and negative perfectionism - the compulsion

to achieve perfection that is associated with self-criticism and symptoms of several mental

disorders (Egan et al., 2007; Shafran & Mansell, 2001). However, dichotomous thinking had no

correlation with positive perfectionism - the drive for perfection that is associated with

achievements and self-improvement (Egan et al., 2007). Dichotomous thinking has also been

found to have associations with suicidal tendency. Suicidal patients in Litinsky & Haslam's

(1998) study used dichotomous languages to describe certain pictures in the

Thematic Apperception Test (Murray, 1943) more frequently than did non-suicidal patients.

Given the associations of dichotomous thinking and other cognitive distortions with mental

disorders and suicidal tendency, it is reasonable to expect that dichotomous thinking and certain

other cognitive distortions may be co-occurring or co-developing and have statistically

significant correlations. However, no known study has reported a correlation between

dichotomous thinking and other types of cognitive distortions, nor has there been a deliberate

attempt to examine such correlations. Some integrative measures of cognitive distortions, such as

the Inventory of Cognitive Distortions (Yurica, 2002), even lacks a subscale for dichotomous

thinking. The current study attempts to examine the correlations between dichotomous thinking

and the following cognitive distortions: jumping to conclusion, belief inflexibility, external attribution bias, overgeneralization, selective abstraction, catastrophizing, and personalization.

Method

Participants

There were 151 people who consented to participate, but only 126 participants (26 men, 99 women, and 1 identifying as other) fully completed the survey. All participants were 18 years or older, and age ranged from 18 to 61 ($M = 22.02$, $SD = 5.94$). The race-ethnicity make-up of the participants was: 63.49% White, 11.11% Hispanic, Latino, or Spanish origin, 9.52% Black, 2.38% Asian, 1.59% Native Hawaiian or other Pacific Islander, and 11.90% mixed or other races or ethnicities. Regarding highest level of education, 15.08% of participants had high school diploma or equivalent, 53.97% some college, 11.11% associate's degree, 11.11% bachelor's degree, 3.17% some post undergraduate work, 4.76% master's degree, and 0.79% doctorate degree. Regarding employment status, 10.32% of participants were employed-full time, 56.35% employed part-time, and 33.33% unemployed. Participants were recruited online, through Facebook (in Student Survey Exchange and The Research Survey Exchange Group), Reddit (in r/samplesize), and Lindenwood Participant Pool (LPP). The LPP consists of Lindenwood University students enrolled in select social science courses that accept LPP credits - earned by participating in research studies approved by the Lindenwood Institutional Review Board - as extra credits. Participants who signed up for the current study through the LPP received one LLP credit, regardless of whether they complete the survey. Because recruitment was online, where certain individuals visit certain platforms or websites, the sampling method was non-probabilistic. The current study was approved by Lindenwood Psychology Program Scientific

Review Committee on February 14, 2020 and by Lindenwood Institutional Review Board on

February 18, 2020.

Materials and Measurements

The survey used in this study was built and conducted on Qualtrics, which allowed

participants to complete the survey using desktops, laptops, smartphones, and other devices. The

link to the survey was posted on Facebook, Reddit, and embedded in Lindenwood's Sona

Systems for recruitment through Lindenwood Participant Pool. The survey incorporated the

Dichotomous Thinking Inventory (DTI; Oshio, 2009), three cognitive bias subscales – i.e.

jumping to conclusion, belief inflexibility, and external attribution - from the Davos Assessment

of Cognitive Biases Scale (DACOBS; van der Gaag et al., 2012), and four cognitive error

subscales – i.e. overgeneralization, selective abstraction, catastrophizing, and personalization -

from a simplified version of the Cognitive Errors Questionnaire (CEQ; Moss-Morris & Petrie,

1997).

Dichotomous Thinking Inventory

As mentioned, the DTI (Oshio, 2009) has three components, namely preference for

dichotomy, dichotomous belief, and profit-and-loss thinking. In the original test, each component

is measured by rating five items on a 6-point scale (1 = *disagree strongly*; 6 = *agree strongly*).

The current study used a 7-point Likert scale so that participants had a choice in the middle.

Items describing preference for dichotomy include "I want to clarify whether things are 'good' or

'bad'." Dichotomous belief is reflected by items such as "All questions have either a right

answer or a wrong answer." Profit-and-loss thinking is reflected by such items as "I want to

clarify whether things are beneficial to me or not." See Appendix A for the full inventory.

Davos Assessment of Cognitive Biases Scale

The DACOBS (van der Gaag et al., 2012) measures cognitive biases in tandem with cognitive limitations and safety behaviors that are often observed in people with psychosis. Each cognitive tendency was represented by six statements rated on a 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*). The current study was only interested in the measurements of three cognitive biases the DACOBS provides, namely jumping to conclusion, belief inflexibility, and external attribution. Jumping to conclusion is the tendency to arrive at conclusions or decisions based on first thoughts or intuition, without much effort to analyze evidence and facts. Statements describing this cognitive bias include "The first thoughts are the right ones." Belief inflexibility is the unwillingness to change conclusions, opinions, or decisions, described by statements such as "I don't need to consider alternatives when making a decision." The original DACOBS (van der Gaag et al., 2020) also included this item: "It's difficult to know what people are feeling by their facial expression." However, I excluded this item in the current study because it seemed not relevant to belief inflexibility. External attribution is the tendency to blame others for any misfortune to oneself, represented by such statements as "Things went wrong in my life because of other people." I excluded the item "I don't change my way of thinking easily" in the original DACOBS because this item seemed not relevant to external attribution. See Appendix B for all items describing these three subscales used in this study.

Cognitive Errors Questionnaire

The CEQ (Moss-Morris & Petrie, 1997) measured and compared four cognitive errors in daily experiences (General) and the same errors in bodily experiences (Somatic). These four cognitive errors include overgeneralization, selective abstraction, catastrophizing, and

personalization. Overgeneralization is the tendency to make general assumptions based on isolated instances; selective abstraction is the tendency to focus on an isolated detail and makes interpretation about that detail without considering context; catastrophizing is the tendency to interpret aversive events as disastrous and irreparable; personalization is the tendency to link oneself to external events. Each cognitive error is represented by three vignettes, rated on a 5-point Likert scale (1 = *almost exactly like I would think*; 2 = *a lot like I would think*; 3 = *somewhat like I would think*; 4 = *a little like I would think*; 5 = *not at all like I would think*). The current study only chooses one vignette to describe each cognitive error in the General CEQ and omit the Somatic CEQ. To maximize mobile device friendliness, the Likert scale with description for each scale point was replaced by a bipolar 5-point scale, with 1 = *not at all like how I would think* and 5 = *exactly like how I would think*. See Appendix C for the vignettes used in this study.

Design

The survey consisted of a consent page, the DTI, the three subscales of the DACOBS, the General CEQ, a demographic questionnaire (see Appendix D), and a debriefing statement, in that order. Items for the DTI (Oshio, 2009), DACOBS (van der Gaag et al., 2012), and General CEQ (Moss-Morris & Petrie, 1997) were randomized. Consenting participants answered the three mentioned cognitive distortions measures, then proceeded to answer demographic questions, and were given a thank and debriefing letter in the end of the survey.

Analysis

Data were analyzed using SPSS. Pearson's correlations were performed to examine the relationships between dichotomous thinking and jumping to conclusion, belief inflexibility, external attribution bias, overgeneralization, selective abstraction, catastrophizing,

personalization, and age. A multivariate analysis of variance (MANOVA) was conducted to

examine the post-hoc question of whether dichotomous thinking and the other seven cognitive

distortions differed between men and women. A stepwise regression analysis was conducted to

build a model that predicts the degree of dichotomous thinking based on the collected

demographic information, i.e. gender, age, race-ethnicity, education, and employment status.

Results

Relationships between Dichotomous Thinking and Other Cognitive Distortions

A series of two-tailed Pearson's correlation analyses were conducted to examine whether

dichotomous thinking was related to the other measured cognitive distortions. The results

revealed that total dichotomous thinking score had statistically significant weak positive

correlations with jumping to conclusion, $r(124) = 0.275$, $p = 0.002$, belief inflexibility, $r(124) =$

0.352, $p < 0.001$, external attribution, $r(124) = 0.287$, $p = 0.001$, and selective abstraction, $r(124)$

$= 0.181$, $p = 0.042$. Age had a statistically significant negative correlation with total dichotomous

thinking score, $r(124) = -0.23$, $p = 0.009$. Regarding the components of dichotomous thinking,

preference for dichotomy had statistically significant positive correlations with external

attribution, $r(124) = 0.203$, $p = 0.023$, and selective abstraction, $r(124) = 0.207$, $p = 0.02$. Profit-

and-loss thinking had a weak positive correlation with jumping to conclusion, $r(124) = 0.197$, p

$= 0.027$. Dichotomous belief had statistically significant moderate positive correlations with

jumping to conclusion, $r(124) = 0.43$, $p < 0.001$, belief inflexibility, $r(124) = 0.558$, $p < 0.001$,

external attribution, $r(124) = 0.336$, $p < 0.001$, weak positive correlations with

overgeneralization, $r(124) = 0.177$, $p = 0.047$, selective abstraction, $r(124) = 0.197$, $p = 0.027$,

and a moderate negative correlation with age, $r(124) = -0.313$, $p < 0.001$). Dichotomous belief

was the main driver of the correlations between total dichotomous thinking score and jumping to

conclusion, belief inflexibility, external attribution, and age. See Table 1 for all observed

correlations in a correlation matrix.

Comparing Men and Women on Cognitive Distortions

After collecting data, I had a post-hoc question of whether men and women differ on any

of the cognitive distortions (dichotomous thinking, jumping to conclusion, belief inflexibility,

external attribution bias, overgeneralization, selective abstraction, catastrophizing,

personalization). In order to test for gender differences, I conducted a MANOVA with gender as

the independent variable (excluding one identifying as other) and the eight cognitive distortion

measures as the dependent variables. The results of the multivariate analysis revealed no

statistically significant differences between men and women on the overall set of cognitive

distortions, $F(8,116) = 1.015$, $p = 0.428$; *Pillai's Trace* $= 0.065$, *partial* $\eta^2 = 0.065$. However, the

results of the univariate tests hint of a potential gender difference for belief inflexibility ($M_{men} =$

13.96, $M_{women} = 12.09$; $F[1,123] = 3.965$, $p = 0.049$, *partial* $\eta^2 = 0.031$) and possibl jumping to

conclusion ($M_{men} = 23.62$, $M_{women} = 21.27$; $F[1,123] = 3.541$, $p = 0.062$, *partial* $\eta^2 = 0.028$) if the

sample size were increased (see Table 2).

Linear Regression Models to Predict Dichotomous Thinking

With demographic data available after data collection, I attempted to build a model to

predict dichotomous thinking score based on demographic variables, i.e. gender, age,

race/ethnicity, highest education level, and employment status. Stepwise linear regression was

performed on SPSS (see Appendix G for regression output). After adjusting for multicollinearity,

the analysis retained two variables that were most correlated with dichotomous thinking: age,

$r(124) = -0.23$, $p = 0.009$, and race-ethnicity, $r(124) = -0.204$, $p = 0.022$. The model that

contained age ($y = 72.813 – 0.589 \times age$) could predict 5.3% of the variability in dichotomous

thinking scores, $R^2 = 0.053$, $p = 0.009$, $F(1,124) = 6.947$. The model that included both age and

race-ethnicity ($y = 81.353 - 0.523 \times age - 1.594 \times race/ethnicity$) could account for 8.3% of the

dichotomous thinking scores, $R^2 = 0.083$, $p = 0.005$, $F(2,123) = 5.538$ (see Table 3). Note that for

the second model to work, race/ethnicity was arranged in the following order: 1 = *American*

Indian or Alaska Native, 2 = *Asian*, 3 = *Black or African American*, 4 = *Hispanic, Latino, or*

Spanish Origin, 5 = *Middle Eastern or North African*, 6 = *Native Hawaiian or Other Pacific*

Islander, 7 = *White or European American*, 8 = *Mixed or Other* (see Appendix D).

Discussion

That dichotomous thinking positively correlates with jumping to conclusion, belief

inflexibility, and external attribution supported the hypothesis that dichotomous thinking should

correlate with at least one of the seven other cognitive distortions. The correlations between

dichotomous thinking, jumping to conclusion, and belief inflexibility were expected.

Theoretically, any of these three tendencies can lead to another, or all three can develop at the

same time. Further investigations need to be done to examine which of the three is most likely

the root cause of the other two.

The positive correlation between dichotomous thinking and external attribution can be

explained by the following theory. If it is true that most people tend to attribute the causes of

events to dispositions (internal factors) rather than situations (Heider, 1958; Ross, 1977), then

those who think dichotomously would see mainly two causes of an adverse incident: either

themselves or other people are to blame for the incident. According to the self-serving bias

theory (Larson, 1977), chances are these individuals will attribute the adverse incidents to other

people instead of themselves. This theory is consistent with the lack of a positive correlation

between dichotomous thinking and personalization, which can be considered the opposite of

external attribution. While individuals with high degree of dichotomous thinking see two choices of either blaming themselves or others, they tend to choose blaming others, which may have resulted in a positive correlation between dichotomous thinking and external attribution but no correlation between dichotomous thinking and personalization.

The positive correlation between dichotomous thinking and selective abstraction was weak and mostly driven by the positive correlation between preference for dichotomy and selective abstraction. A preference for clarity could explain the behavior of singling out details from context. I found no past research that looked specifically into the relationship between selective abstraction and preference for dichotomy or clarity, so future research could examine potential relationships between these two tendencies.

Of the components of dichotomous thinking, dichotomous belief correlated stronger with the same four cognitive distortions that total DTI score had correlations with (namely jumping to conclusion, belief inflexibility, external attribution, and selective abstraction). Dichotomous belief also had weak positive correlations with overgeneralization. That dichotomous belief drove the relationships between total DTI score and other factors was consistent with Oshio's (2012) findings. Oshio reported that preference for dichotomy correlated with seven personality disorders, profit-and-loss thinking with one, and dichotomous belief with all 10 personality disorders.

Regarding the linear models to predict dichotomous thinking based on demographic variables, although the model that included both age and race/ethnicity ($R^2 = 0.083$) could account for more variability in dichotomous thinking score than the model that had only age ($R^2 = 0.053$), race/ethnicity does not have strong theoretical basis to be a predictor for a cognitive tendency. Firstly, race/ethnicity is a nominal variable, and the numerical order of race/ethnicity

used for analysis was simply alphabetical. Secondly, the examined sample has no representative who is American Indian or Alaska Native or Middle Eastern or North African (i.e. lacking level 1 and 5). Thirdly, 63.49% of participants were White or European American, coincidentally corresponding to level 7, which would be high in an ordinal or ratio scale with eight levels. This phenomenon possibly explains the "correlation" between race/ethnicity and dichotomous thinking. To predict degree of dichotomous thinking, therefore, the model that includes only age would be more reliable in other data sets. Theoretically, the older people get, the more they observe and learn that not everything can be divided in two extremes (i.e. dichotomous belief), or the less they seek for clear-cut answers (i.e. preference for dichotomy), and the less they think dichotomously.

The current study had typical limitations of online studies: non-probability sampling and limited generalizability. Additionally, the requested demographic information was not sufficient to build a meaningful model that could predict degree of dichotomous thinking. Although no causal claim can be made following this study, the observed correlations suggested theories and questions for further investigations. Future studies can zoom into examining potential causal, mediating, or moderating relationships between dichotomous thinking, jumping to conclusion, belief inflexibility, external attribution bias, and selective abstraction.

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Appendix A

Dichotomous Thinking Inventory (Oshio, 2009)

Preference for Dichotomy

1. All things work out better when likes and dislikes are clear.

2. It works out best when even ambiguous things are made clear-cut.

3. I dislike ambiguous attitudes.

4. I want to clarify whether things are "good" or "bad."

5. I prefer it when boundaries are clear for all things.

Dichotomous Belief

6. There are only "winners" and "losers" in this world.

7. I think all people can be divided into "winners" or "losers."

8. People can clearly be distinguished as being "good" or "bad."

9. All questions have either a right answer or a wrong answer.

10. I think of everyone as being either my friend or my enemy.

Profit-and-Loss Thinking

11. I want to clearly distinguish what is safe and what is dangerous.

12. Information should be defined as either true or false.

13. I want to clarify whether things are beneficial to me or not.

14. I prefer to classify information as being useful or useless for me.

15. It is best when competitions have clear outcomes.

Appendix B

Jumping to Conclusion, Belief Inflexibility, and External Attribution

from the Davos Assessment of Cognitive Biases Scale (van der Gaag et al., 2013)

Jumping to Conclusion

1. I don't need long to reach a conclusion.

2. The right conclusion often pops in my mind.

3. I quickly find evidence to support my beliefs.

4. I make decisions faster than other people.

5. The first thoughts are the right ones.

6. I don't need to evaluate all the facts to reach a conclusion.

Belief Inflexibility

7. don't need to consider alternatives when making a decision.

8. When I have a goal I don't know how to reach it.

9. There is usually only one explanation for a single event.

10. I don't need to look for additional information when making a decision.

11. I avoid considering information which will disconfirm my beliefs.

External Attribution

12. Things went wrong in my life because of other people.

13. It's NOT my fault when things go wrong in my life.

14. People don't give me a chance to do well.

15. People make my life miserable.

16. People treat me badly for no reason.

Appendix C

Cognitive Errors Questionnaire – General (Moss-Morris & Petrie, 1997)

Instructions: Please rate the following thoughts on the extent to which they resemble the way you would think given the same situations (1 = Not at all like how I would think; 5 = Exactly like how I would think).

1. **Overgeneralization**

   Recently a number of your friends are learning to play tennis. You would like to learn, but remember the difficulty you had the time you tried to ski. You think to yourself. "I was useless at skiing so I doubt if I can learn to play tennis."

2. **Selective Abstraction**

   You met with your boss today to discuss how you have been doing in your job. (S)he says that you were doing a really good job, but asked you to improve in one small area. You think to yourself, "(S)he really thinks I am doing a lousy job."

3. **Catastrophizing**

   You have an argument with a friend. When she doesn't call you as usual during the week, you think, "Our friendship is ruined, and she doesn't want to speak to me again."

4. **Personalization**

   You played golf for the first time today with some of your friends who play regularly. Everybody seemed a bit disappointed with their play, and the group seemed a bit subdued on the way home. You thought to yourself, "I guess I held them back and spoiled the game for them."

Appendix D
Demographic Questions and Numerical Coding

Q9 Please identify your gender.

○ Male (1)

○ Female (2)

○ Other (3) _____

Q10 What is your age in years?

_____

Q11 What is your race/ethnicity? (mark all that apply)

☐ American Indian or Alaska Native (1)

☐ Asian (2)

☐ Black or African American (3)

☐ Hispanic, Latino, or Spanish Origin (4)

☐ Middle Eastern or North African (5)

☐ Native Hawaiian or Other Pacific Islander (6)

☐ White or European American (7)

☐ Other, please specify (8) _____

Q12 What is your highest level of education completed?

○ Some high school (1)

○ High school diploma or equivalent (2)

○ Vocational training (3)

○ Some college (4)

○ Associate's degree (e.g., AA, AE, AFA, AS, ASN) (5)

○ Bachelor's degree (e.g., BA, BBA, BFA, BS) (6)

○ Some post undergraduate work (7)

○ Master's degree (e.g., MA, MBA, MFA, MS, MSW) (8)

○ Specialist degree (e.g., EdS) (9)

○ Doctorate degree (e.g., EdD, PhD, MD, PsyD, DDC, DDS, JD, PharmD) (10)

○ Other, please specify (11) _____

Q13 What is your current employment status?

○ Employed, full-time (1)

○ Employed, part-time (2)

○ Unemployed (3)

○ Retired (4)

Table 1

Correlation Matrix Among Dichotomous Thinking, Its Components, Seven Other Cognitive Distortions, and Age

Measure	1	2	3	4	5	6	7	8	9	10	11
1. Dichotomous thinking											
2. Preference for dichotomy	.821***										
3. Dichotomous belief	.807***	.437***									
4. Profit-and-loss thinking	.851***	.636***	.507***								
5. Jumping to conclusion	.275**	.021	.430***	.197*							
6. Belief inflexibility	.352***	.100	.558***	.170	.566*						
7. External attribution	.287**	.203*	.336***	.155	.277*	.564*					
8. Overgeneralization	.105	.078	.177*	-.010	.001	.364***	.383***				
9. Selective abstraction	.181*	.207*	.197*	.036	.038	.254**	.316***	.444***			
10. Catastrophizing	.108	.124	.116	.023	-.027	.274*	.288*	.432*	.423**		
11. Personalization	.052	.125	.029	-.025	.027	.117	.314*	.365**	.357**	.399*	
12. Age	-.230**	-.128	-.313***	-.109	-.095	-.186*	.003	.022	.116	.131	.096

Note: This table demonstrates two-tail Pearson's correlation coefficients among dichotomous

thinking, its components, seven other cognitive distortions, and age.

*. Correlation is significant at the 0.05 level (2-tailed).

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

***. Correlation is significant at the 0.001 level (2-tailed)

Table 2

Means, Standard Deviations, and Tests of Between-Subjects Effects of Gender on Cognitive Distortions

Measure	Male (N = 26)		Female (N = 99)		Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
	M	SD	M	SD						
Dichotomous thinking	62.27	16.68	59.53	14.52	155.046	1	155.046	0.690	0.408	0.006
Jumping to conclusion	23.62	5.17	21.27	5.77	113.01	1	113.01	3.541	0.062	0.028
Belief inflexibility	13.96	4.73	12.09	4.14	72.057	1	72.057	3.965	0.049	0.031
External attribution	14.04	6.61	13.51	5.36	5.639	1	5.639	0.178	0.674	0.001
Overgeneralization	2.04	1.08	1.69	1.02	2.546	1	2.546	2.404	0.124	0.019
Selective abstraction	2.07	1.87	0.93	1.08	0.893	1	0.893	0.801	0.373	0.006
Catastrophizing	2.38	2.40	1.20	1.22	0.008	1	0.008	0.005	0.942	0.000
Personalization	2.31	2.29	1.29	1.26	0.004	1	0.004	0.003	0.958	0.000

Note: This table shows mean scores and standard deviations of men and women on eight measured cognitive distortions and results of univariate tests of the effect of gender on the differences between men's and women's scores. Type III sum of square calculates the sum of squared deviations from the mean between men and women to measure how far observations deviate from the mean, adjusting for uneven group sizes. Mean square, or total variability, is sum of squares divided by degree of freedom (df). Partial eta squared represents the effect size of gender on the differences between men and women.

Table 3

Stepwise Linear Regression Results Using Dichotomous Thinking as Dependent Variable and Demographic Variables as Independent Variables

Model	Predictor	B	B 95% CI [LL, UL]	Std. Error	β	sr^2	Sig.	F	R	R^2	Adjusted R^2
1	(Intercept)	72.813	[62.727, 82.900]	5.096			0.000	6.947	0.230	0.053	0.045
	Age	-0.589	[-1.031, -0.147]	0.223	-0.230	0.0529	0.009				
2	(Intercept)	81.353	[68.258, 94.448]	6.616			0.000	5.538	0.287	0.083	0.068
	Age	-0.523	[-0.965, -0.081]	0.223	-0.205	0.0429	0.021				
	Race_Ethnicity	-1.594	[-3.178, -0.009]	0.801	-0.174	0.0313	0.049				

Note: The table shows unstandardized coefficients (*B*), lower limits (LL) and upper limits (UL) of confidence interval, standardized coefficients (*β*), semi-partial correlation squared (*sr²*), significance of coefficients (Sig.), F-value of models' significance (F), the models' correlation coefficients (*R*), coefficients of determination (*R²*), and coefficients of determination adjusted for number of predictors (adjusted *R²*).

Academic Success and Its Relation to Academic Habits and Motivation

Sam Ebert[**]

Objective: *Many factors contribute to academic success. Previous research has produced inconclusive results when identifying which factors play the largest role in predicting academic success. This study focusses on the relationships between academic success, motivation, and academic habits. I hypothesized that college students who report being highly motivated will have greater academic success than those who report being less motivated. I also hypothesized that there would be a strong positive relationship between college students engaging in good academic habits and high academic success. My two other hypotheses included that motivation score would be positively correlated with academic habit scores and that intrinsic motivation would have a stronger relationship with academic success than extrinsic motivation.* ***Method:*** *Participants (N = 69) took an online survey that asked them about their basic demographics, GPA, study habits, and motivation.* ***Results:*** *Correlational analyses partially confirmed the hypotheses. The first hypothesis was not supported; however, I found a statistically significant positive relationship between academic habits and academic success.* ***Conclusion:*** *Since motivation and academic habits are not the only factors that may predict academic success, more research should be conducted in the future to identify the multitudes of predictors that collectively contribute to academic success.*

Keywords: academic success, GPA, self-regulation, motivation

There is a wide range of factors that can lead to academic success. It is clear that students must have the cognitive abilities to attain academic achievement, but past research has largely focused on how and if motivation and self-regulation play a role in acquiring the success that students strive to earn. Generally, researchers have hypothesized that higher levels of motivation and self-regulation predict greater academic success (Kitsantas, 2002; Kitsantas et al., 2008; Linnenbrink & Pintrich, 2002; Turner et al., 2009).

Self-determination theory has been a key approach to defining qualities of motivation and the role they have in goal achievement (Linnenbrink & Pintrich, 2002). Qualities of motivation

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have previously been divided into three subtypes: intrinsic, extrinsic, and amotivation.

Individuals who are intrinsically motivated complete tasks because they are inherently interested

in doing so for their own enjoyment, whereas individuals who are extrinsically motivated

complete tasks because they are driven by external factors for their personal gain. Amotivation is

simply a lack of motivation (Linnenbrink & Pintrich, 2002; Vansteenkiste et al., 2006). By

determining the underlying motivation of learned behaviors, researchers aim to use these data to

understand factors that may predict success in academia.

While it may be the case that intrinsically and extrinsically motivated behaviors originate

from individual differences, Vansteenkiste et al. (2004) created an experimental study that aimed

to frame learned material as either intrinsic or extrinsic and then measure its effect on students'

comprehension. They found that students who learned material that was framed to be

intrinsically motivating showed greater persistence in learning, deeper processing, and higher

test performance on the material than the students in the group who learned material that was

framed to be extrinsically motivating. This study illustrates that although some students may

naturally be extrinsically motivated to succeed in academia, course material can be framed in

such a way that it seems intrinsically motivating which could then lead to greater academic

success (Vansteenkiste et al., 2004).

Another study that focused on motivation's role in academic success found a positive

correlation between intrinsic motivation scores and the grade point average (GPA) of college

students (Turner et al., 2009). They did not mention anything about extrinsic motivation scores,

so it is unclear whether it played a role in this sample's academic success. In addition to intrinsic

motivation, Turner et al. (2009) found a positive correlation between the amount of time students

spent studying in hours per week and GPA. Increased time studying is just one quality that is considered to be a part of academic self-regulation.

Academically self-regulated students are active in their own learning process. They independently seek out new information, utilize useful strategies to reach goals, and have a self-oriented feedback loop (Zimmerman, 1990). This feedback loop is a process where self-regulated learners monitor their learning strategies and then modify their self-perception and behaviors in reaction to their effectiveness (Zimmerman, 1990). While results have been inconsistent across research studies, the general thought is that students who become masters of their learning tend to perform better in academic settings than others who take less initiative (Kitsantas et al., 2008; Zimmerman, 1990).

Contrary to the results found by Turner et al. (2009), another study that measured study habits' relation with academic success found no direct correlation between hours per week that students spent studying and cumulative GPA (Nonis & Hudson, 2010). Instead, they found that students who waited until the last minute to cram for exams were likely to have higher semester GPAs than students who studied well in advanced for exams (Nonis & Hudson, 2010). While this yielded results counterintuitive to what the self-regulation hypothesis supports, one must ask if semester GPA is an appropriate measure for academic success. Instead, these findings may illustrate how using strategic cramming methods can generate short-term knowledge and scores, but they may not show the overall understanding of course material and the ability to utilize it for future use (Nonis & Hudson, 2010).

Kitsantas et al. (2008) conducted a study to see if self-regulation was a predictor of academic success in first and second-year college students. They found significant correlations between students' Motivated Strategies for Learning Questionnaire scores and GPAs.

Specifically, students who reported effective time management were more likely to have higher GPAs during their first two years of college compared to students who reported having poor time management. Surprisingly, they also found that there was no statistically significant correlation between metacognitive learning strategies (i.e. planning and monitoring academic performance) and the academic success of students during their first two years of college (Kitsantas et al., 2008).

Since students with self-regulatory behaviors are thought to have higher academic success, Kitsantas (2002) conducted interviews with students who previously took an academic test and asked them about their behaviors. These results showed that students who scored high on the test used self-regulatory processing while taking their test, studying for their test, and after receiving their test grade. Compared to students who scored low, high test scorers were more likely to set manageable academic goals for themselves, follow through with the goals, and seek help if they needed it before taking the test (Kitsantas, 2002). Additionally, those who scored lower were more likely to use memorization strategies that are not ideal for deep processing and understanding of the material, such as rehearsal. During the test, students who scored high reported that they planned out their essay responses before writing them and reviewed their answers before finishing the test. Finally, many high test scorers reported that after they received their test grades, they created a plan for improvement and got help with the material they struggled with (Kitsantas, 2002). Overall, high test scorers were significantly more likely to report using self-regulatory behaviors before, during, and after the test; thus, this could be a main factor that influenced their high test grade and could suggest that self-regulation plays a significant role in overall academic success (Kitsantas, 2002).

While some studies have shown that self-regulated students are more likely to obtain academic success compared to their passive classmates, others have found ambiguous results (Kitsantas, 2002; Kitsantas et al., 2008; Zimmerman, 1990). Due to limitations in previous studies and inconclusive results throughout the literature, more research must be conducted to establish consistent relationships between motivation, self-regulation, and academic success.

The purpose of the current study was to provide some clarity to the existing data and assess relationships between academic success, motivation, and self-regulation. To do this, current college students were asked to participate in an online survey that asked about these respective topics. I hypothesized that the academic success of college students would be positively correlated with both overall motivation and academic habits. I also hypothesized that students who report high levels of overall motivation would also report engaging in positive academic habits. My final hypothesis was intrinsic motivation would have a stronger relationship with academic success than extrinsic motivation.

Method

Participants

A total of 69 college students participated in this study in March and April 2020. I originally intended to enroll at least 100 participants. There were 135 participants who consented to participate in the survey, but only 89 (65.93%) of them met the qualification criteria. My qualification criteria required that the participants were 18 years or older, currently enrolled in an American college, and have completed at least two college semesters. Any person who did not confirm that they met the above criteria was directed to the end of the survey and thanked for their time. Of those who qualified, 69 (77.53%) completed the entire survey and provided useful data. One of the participants did not report useful data (e.g., they answered each question with

the same number and typed random characters in text entry boxes) and 19 (21.35%) participants

did not complete enough of the survey to be used in the analyses. The final sample consisted of

69 American college students.

Of the 69 participants, 55 (79.7%) were women and 14 (20.3%) were men. The ethnic

background of the participants was: 44 (63.8%) White, 7 (10.1%) Hispanic or Latino, 4 (5.8%)

Black, 4 (5.8%) Asian, and 10 (14.5%) mixed or other. The reported majors of the participants

varied greatly, but psychology was the most common major and was reported by 22 (31.9%)

participants. All participants were recruited through Reddit, Facebook, or the Lindenwood

Participant Pool (LPP). The subreddits that the survey was posted in included: r/Samplesize and

r/University. The LPP is a group of Lindenwood University students who are enrolled in social

science classes and have the opportunity to participate in research studies for extra credit. Until

March 16, 2020, participants who were recruited through the LPP were granted one extra credit

point, regardless if they met the criteria or finished the survey. Due to the coronavirus pandemic,

LPP participants were granted two extra credit points after March 16, 2020. This was allowed

because LPP participants no longer had the ability to participant in in-person studies, studies they

typically would get between two and four extra credit points for participating in. Non-LPP

participants were not compensated for their participation. This study met the ethical standards

and guidelines of Lindenwood University's Psychology Program Scientific Review Committee

and Institutional Review Board.

Materials and Measures

The survey completed by participants was created on Qualtrics, an online survey

platform. The survey consisted of questions regarding the participants' basic demographics,

academic success, academic habits, and motivation (see Appendix). Academic success was

measured by the GPA reported by each participant. Academic habits were measured on a 5-point Likert scale and participants were asked to select the degree to which the statements correspond with their academic habits (e.g., I actively listen during lectures). The responses to each question were summed up to create an overall academic habits score.

Motivation questions were derived from the Academic Motivation Scale (Vallerand et al., 1989), a questionnaire that measures intrinsic, extrinsic, and amotivation. These questions were measured on a 5-point Likert scale by asking the participant to select the degree to which the statements correspond with the reasons why they go to college (i.e., because with only a high-school diploma I would not find a high-paying job later on). Responses were separated into each motivation category to create three different motivation sub-scores. Additionally, intrinsic and extrinsic motivation scores were summed together to create an overall motivation score.

Analysis

Correlational statistics were used to identify relationships between academic success, academic habits, and motivation. Specifically, I ran correlational analyses on each of the following factor pairs, GPA and academic habits, GPA and overall motivation, GPA and intrinsic motivation, GPA and extrinsic motivation, and academic habits and motivation. All data analyses were conducted on Microsoft Excel.

Results

The participants' GPA ranged between 1.2 and 4.0, $M = 3.42$ ($SD = 0.45$). Average scores for subcategories of the survey were as follows: overall motivation $M = 88.2$ ($SD = 16.2$), intrinsic motivation $M = 40.9$ ($SD = 10.8$), extrinsic motivation $M = 47.1$ ($SD = 9.1$), and academic habits $M = 52.9$ ($SD = 9.1$). I hypothesized that motivation would have a statistically significant positive correlation with GPA. Specifically, intrinsic motivation would be more

strongly correlated with GPA than extrinsic motivation. I used a Pearson's correlation and found that there was no statistically significant relationship between overall motivation and GPA, $r(67) = 0.11$, $p = 0.36$, extrinsic motivation and GPA, $r(67) = -0.02$, $p = 0.89$, or intrinsic motivation and GPA, $r(67) = 0.18$, $p = 0.13$. These finding were unsupportive of my first two hypotheses.

I also hypothesized that engagement in positive academic habits would be positively correlated with academic success. By using a Pearson's correlation, I found a statistically significant weak correlation (see Figure 1) between academic habits and GPA, $r(67) = 0.29$, $p < 0.05$. This finding was supportive of my hypothesis. My final hypothesis was that overall motivation would have a positive relationship with academic habits. This hypothesis was also supported, and by using a Pearson's correlation I found a statistically significant positive correlation between motivation scores and academic habit scores (see Figure 2), $r(67) = 0.47$, $p < 0.001$).

Discussion

The purpose of this study was to see if there were relationships between academic success, motivation, and academic habits. The original hypothesis of there being strong relationships between the variables previously mentioned was partially supported. In accordance with previous research (Kitsantas, 2002; Kitsantas, 2002), correlational analyses revealed a significant relationship between academic habits and GPA, but the relationship was weaker than originally expected. Given that Kitstantas (2002) found that academic time management had a significant positive relationship with GPA but monitoring and planning did not, may account for the weak relationship; since both factors were asked in the academic habits subsection of the current survey and were both included in the total academic habits score during the final analysis. Additionally, there was a moderately strong correlation found between academic habits

and motivation. Students who reported being motivated also reported engaging in academic habits that are thought to promote academic success. The inability to find a significant relationship between motivation and academic success was contrary to my hypothesis as well as that of Turner et al. (2009). A possible explanation for this insignificant finding may be that my sample size was unrepresentative of the population.

A major limitation of the study was that I did not achieve the intended sample size since some of the data were incomplete and had to be excluded from the final analysis. Having a larger sample would allow for a greater amount of data. I also must question if the sample was representative of the population. Since many participants were psychology students, it may have been useful to have a wider range of students from other majors participate in the study. While the current findings did not fully support my original hypotheses, one must consider that academic habits and motivation are only two factors of many that contribute to academic success. In the future, research should direct its attention to the multitudes of factors that collectively contribute to academic success such as high school academic performance, motivation, academic habits, support systems, work-life, extracurriculars, and overall interest in their major of choice. By considering all factors that lead to academic success, one may be able to answer the long-asked question on what predicts academic success.

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Figure 1

Relation Between Academic Habits and GPA
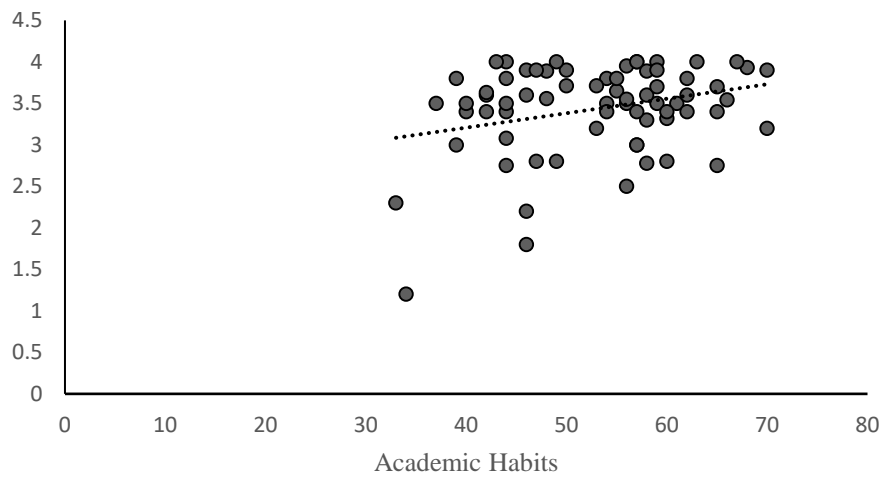
Note. Scatterplot depicting the relationship between academic habits and GPA (grade point average).

Figure 2

Relation Between Academic Habits and Motivation
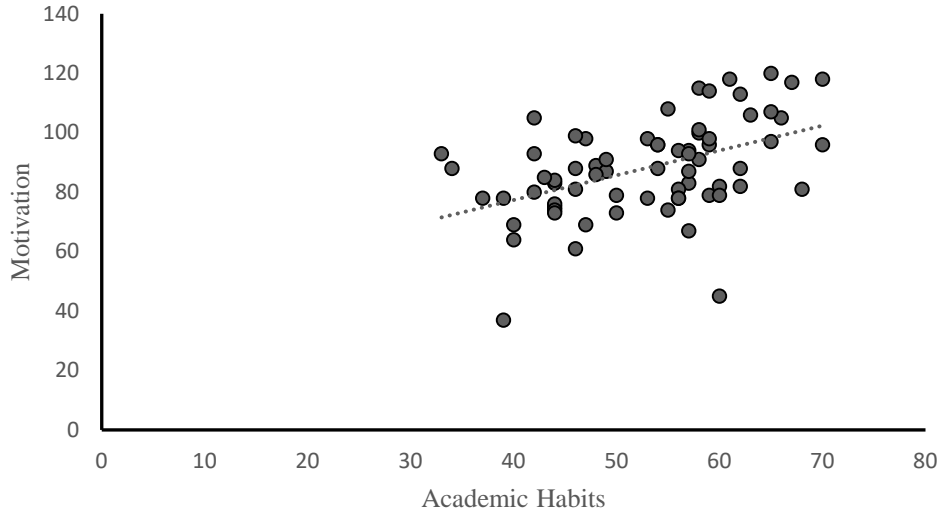
Note. Scatterplot depicting the relationship between academic habits and motivation scores.

Appendix

Background Information

1. Are you currently enrolled in college?

                         Yes   No

2. Is your college located in the United States?

                         Yes   No

3. Have you completed at least two semesters of college (one full year)?

                         Yes   No

4. What is/are your major(s) _____

5. What is your grade point average (GPA)? _____

6. How do you currently describe your gender identity?

                    Male   Female   Self Identify

7. Which categories describe you? Select all that apply to you:

    o   Asian - For example, Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese

    o   Black or African American- For example, Jamaican, Haitian, Nigerian, Ethiopian, Somalian

    o   Hispanic, Latino, or Spanish Origin- For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian

    o   Middle Eastern or North African- For example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian

    o   Native Hawaiian or Other Pacific Islander- For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese

    o   White or European American- For example, German, Irish, English, Italian, Polish, French

    o   Some other race, ethnicity, or origin, please specify:

Motivation Questions

Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons WHY YOU GO TO COLLEGE.

                         1 = Does not correspond at all

2= Corresponds a little

3= Corresponds moderately

4 = Corresponds a lot

5= Corresponds exactly

8. Because with only a high-school degree I would not find a high-paying job later on.

    1   2   3   4   5

9. Because I experience pleasure and satisfaction while learning new things.

    1   2   3   4   5

10. Because I think that a college education will help me better prepare for the career I have chosen.

    1   2   3   4   5

11. For the intense feelings I experience when I am communicating my own ideas to others.

    1   2   3   4   5

12. Honestly, I don't know; I really feel that I am wasting my time in school.

    1   2   3   4   5

13. For the pleasure I experience while surpassing myself in my studies.

    1   2   3   4   5

14. To prove to myself that I am capable of completing my college degree.

    1   2   3   4   5

15. In order to obtain a more prestigious job later on.

    1   2   3   4   5

16. For the pleasure I experience when I discover new things never seen before

    1   2   3   4   5

17. Because eventually it will enable me to enter the job market in a field that I like.

    1   2   3   4   5

18. For the pleasure that I experience when I read interesting authors.

    1   2   3   4   5

19. I once had good reasons for going to college; however, now I wonder whether I should continue.

    1   2   3   4   5

20. For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.

<div align="center">1   2   3   4   5</div>

21. Because of the fact that when I succeed in college I feel important.

<div align="center">1   2   3   4   5</div>

22. For the pleasure that I experience in broadening my   knowledge about subjects which appeal to me.

<div align="center">1   2   3   4   5</div>

23. Because this will help me make a better choice regarding my career orientation.

<div align="center">1   2   3   4   5</div>

24. For the pleasure that I experience when I feel completely absorbed by what certain authors have written.

<div align="center">1   2   3   4   5</div>

25. can't see why I go to college and frankly, I couldn't care less.

<div align="center">1   2   3   4   5</div>

26. For the satisfaction I feel when I am in the process of   accomplishing difficult academic activities.

<div align="center">1   2   3   4   5</div>

27. To show myself that I am an intelligent person

<div align="center">1   2   3   4   5</div>

28. In order to have a better salary later on.

<div align="center">1   2   3   4   5</div>

29. Because my studies allow me to continue to learn about many things that interest me.

<div align="center">1   2   3   4   5</div>

30. Because I believe that a few additional years of education will improve my competence as a worker.

<div align="center">1   2   3   4   5</div>

31. For the "high" feeling that I experience while reading about various interesting subjects.

<div align="center">1   2   3   4   5</div>

32. I don't know; I can't understand what I am doing in school.

<div align="center">1   2   3   4   5</div>

33. Because college allows me to experience a personal satisfaction in my quest for

excellence in my studies.

1   2   3   4   5

34. Because I want to show myself that I can succeed   in my studies.

1   2   3   4   5

Academic Habits Questions

Please indicate which of the following options best describe your ACADEMIC HABITS.

1 = Never

2 = Sometimes

3 = About half of the time

4 = Most of the time

5 = Always

35. I study for exams.

1   2   3   4   5

36. I create my own study materials for exams.

1   2   3   4   5

37. I read the assigned material from the textbook.

1   2   3   4   5

38. I actively listen during lectures.

1   2   3   4   5

39. I ask questions during class.

1   2   3   4   5

40. I participate during class discussions.

1   2   3   4   5

41. I attend all my classes.

1   2   3   4   5

42. I take detailed notes during class.

1   2   3   4   5

43. I study many days in advance for exams.

1   2   3   4   5

44. When I don't understand something in class, I seek out resources to help me understand it.

                       1   2   3   4   5

45. I turn in assignments on time.

                       1   2   3   4   5

46. I am organized.

                       1   2   3   4   5

47. I keep up with my schoolwork and don't procrastinate.

                       1   2   3   4   5

48. I set academic goals for myself.

                       1   2   3   4   5

SPECIAL FEATURE: PSYCHOLOGY RESEARCH LAB AND SENIOR THESIS FALL 2019 & SPRING 2020

Fall 2019 PSY48300 Senior Thesis

Do Violent Video Games Stimulate Aggressive Tendencies?

Megan Hamilton[††]

This study looked at the relationship between violent video game (VVG) play and aggressive tendencies. Participants were required to be at least 18 years of age or older and were recruited through flyers in the Library and Academic Resource Center and Young Hall on the Lindenwood University campus, as well as through the Lindenwood Participant Pool. Participants took a pretest on Qualtrics measuring aggressive tendencies and after the pretest, participants were systematically chosen to either play Grand Theft Auto V (GTAV); (Rockstar Games, 2014) or Stardew Valley (Barone & Sickhead Games, 2016). Following gameplay, participants then took a posttest on Qualtrics measuring aggressive tendencies again and finished by completing demographic questions. Hypotheses included: 1) VVG causes an increase in aggression in players; 2) People who identify as men will have a higher level of increase in aggression than other genders when playing the VVG whereas there will be no difference between people who identify as men and people who identify as women in level of aggression when playing the calm video game (CVG); 3) People with more experience playing video games will have less increase in aggression compared with less experienced players. Results showed Stardew Valley having higher increase in aggression levels compared to GTAV, men showing less increase in aggression than women when playing both games, and people with more experience with video games having less increase in aggression than less experienced players. The third hypothesis had the only statistically significant finding (t(13) = 2.49, p = .03).
Keywords: violent video games, aggression, aggressive tendencies

In the current day and time, video games are becoming a common pastime for children,

teens, young adults, and sometimes adults on a day-to-day basis. These video games come in a

slew of different genres ranging from first-person shooters to farm simulators. With video games

come violent video games (VVG), which have their own wide range of genres as well. The

violence in these games can go from something small such as shooting animals in a hunting

game or pushing another player in a sports game, to something very violent such as killing other

humans in a criminal point-of-view game. VVG are games where the best or only resolution to

the situation at hand is to perform a violent act, such as killing someone. VVG have a current reputation to be the reason for violence in real life. A recent example of this occurring is President Donald Trump using VVG as the reasoning for school shootings (Keith & Naylor, 2019). According to Keith and Naylor (2019), in a speech occurring after the recent shootings in El Paso, Texas and Dayton, Ohio, Trump blamed violent video games and the Internet for the violence occurring out in society, that these sources made it easy for younger citizens to revel in violence, and that there is a great need to stop or reduce these actions. The rationale for the current study is VVG being used as a causing factor for school shootings. Rather than test for violent behaviors, I examined aggressive tendencies instead.

When looking at the relationship between violent video games and aggression, many previous researchers have found a positive correlation. Anderson and Dill (2000) conducted a study comparing the difference in exposure to video game violence as well as time spent playing video games with aggressive behavior, world view, academic achievement, and delinquency. To assess these different factors, Anderson and Dill used a self-report questionnaire that included multiple different scales. The Capara Irritability Scale (Capara et al., 1985) was used to measure how participants believe they would impulsively react to different situations of frustration or provocation (Anderson & Dill, 2000). To measure trait aggression, the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992) was used to measure things such as hostility, anger, and physical and verbal aggression (Anderson & Dill, 2000). When measuring for delinquency, they used the same self-report delinquency measure that was made specifically for the National Youth Survey (Elliot et al., 1985). This self-report measure includes 45 different situations that are delved into two different categories; aggressive behavior and nonaggressive delinquency (Anderson & Dill, 2000). Finally, they included questions regarding how long participants play

video games a week, what their top five list of video games were and how much violence each

included, questions regarding their views on the world, and academic achievement. Their results

showed positive correlations between aggressive personality and high exposure to VVG and

aggressive personality VVG play and aggressive and nonaggressive delinquent behaviors.

Following this study, Anderson and Dill (2000) proceeded forward with another study to

measure short-term aggression after playing a violent video game. In this study, participants

were randomly chosen to either play the violent video game, Wolfenstein 3D (iD Software,

1992), or one of the nonviolent video games, Myst (Cyan, Inc., 1993) or Tetrix (Olinger, 1991).

Participants had two separate lab sessions to attend. In the first lab session, the participant played

whichever game they were assigned to for 15 min, took the State Hostility Scale and the world

view measure, played the video game for another 15 min, and finished by taking a cognitive

measure of aggressive thinking. After a week had passed, the participant came back for the

second lab session. At this lab session, participants played 15 min of their assigned video game

and then took the competitive reaction time task. For the competitive reaction time task,

participants were told that they wanted to push a button faster than their opponent, if they lost,

they would receive a blast of noise at a level that was set by their opponent – in reality their

"opponent" was a computer, when they believed it was another person (Anderson & Dill, 2000).

Aggression was measured by how loud and how long the participant decided to give the noise to

their opponent (the computer). The results of this study showed that playing the violent video

game had a positive correlation with increase in aggressive behaviors. They also found that

women displayed higher levels of aggression and state hostility than did the men (Anderson &

Dill, 2000).

Although Anderson and Dill (2000) found that women displayed higher levels of aggression than men, in a study conducted by Teng et al. (2019), there was no gender difference in aggression level found. Teng et al.'s (2019) longitudinal study looked at the relationship between violent video game exposure and aggression in Chinese adolescents over the course of 18 months and was given in three different waves, each being 6 months apart. Alongside age, Teng et al. (2019) also compared age differences in early and late adolescents. In order to measure exposure to violent video games, the participants listed their top three video games, said how frequently they played each game listed, and then rated how violent they believed the games were. Following this, the participants took the Moral Disengagement Scale (Bandura et al., 1996). Once completed, both self-reported aggression and peer-reported aggression was measured. Peer-reported aggression was measured by physical aggression and relational aggression. Self-reported aggression was measured with the Brief Aggression Questionnaire (Webster et al., 2014). Their results found a link between violent video game exposure and aggression, as well as a stronger association between the two for early adolescents compared to late adolescents.

In another longitudinal study conducted by Willoughby, Adachi, and Good (2012) over the course of four years, the relationship between violent video games and aggression in high school students was looked at. Each year of high school, the participants took a survey regarding demographic factors, direct aggression, time spent playing both violent and nonviolent video games, overall video game play, depressive symptoms, delay of gratification, peer deviance, sports involvement, friendship quality, parent-adolescent relationship quality, school culture, and parental control. The responses given each year were compared to note any changes, if any at all. Their results showed that when playing violent video games across all four years of high school,

a more rapid increase in aggression was shown than those who claimed less time spent playing

violent video games. An increase in aggression was not shown in those who played nonviolent

video games (Willoughby, et al., 2012).

Hasan, Bégue, Scharkow, and Bushman (2013) found similar results to Willoughby et

al.'s (2012) study. This study was conducted over three consecutive days. Each day, participants

played either a violent or nonviolent video game, to which they were randomly assigned. Each

day, a different game was randomly assigned. After gameplay, participants completed an

ambiguous story stem to which they would list 20 things that they believed the main character of

the story would say, think, do, or feel after the situation that had played out (Hasan et al., 2013).

Following this, participants were told they would be competing against another person, whom in

reality was a confederate, to push a button faster than the other. The winner would be able to

send a noise blast through headphones to the loser, similar to the second part of Anderson and

Dill's (2000) study (Hasan et al., 2013). The duration and intensity that the participant decided to

give to the "loser" was used to measure aggression. The results showed an increase over time in

aggression for violent video game players, but not for nonviolent video game players. They also

found no significant differences between genders (Hasan, et al., 2013).

Rillera Marzo, et al. (2019) conducted their study on a group of male adolescents in

Malaysia. In this study, they examined what the relationship between violent video games and

aggression and changes in behavior after playing the violent video games, to see the association

between empathetic behavior and video games, and the relationship between altruism and video

games. Four different sets of questionnaires were given to the participants; the Multi-

Dimensional Emotional Empathy Scale (Caruso & Mayer, 1998), the Buss-Perry Aggression

Questionnaire (Buss & Perry, 1992), a Self-Report Altruism Scale (Rillera Marzo, et al., 2019),

and demographic information. Rather than playing the video games during the study, the

demographic survey collected information on what type of video games – violent or nonviolent –

participants played, as well as how long they spent playing these games. Their results revealed a

relationship between playing video games and showing a low altruism score, a positive

correlation between playing video games and having aggressive behavior and showed a lower

sense of empathy among the male adolescents that played video games (Rillera Marzo et al.,

2019).

Some studies, such as that of Arriaga, Monteiro, and Esteves (2011), also looked at

previous experience with playing violent video games in analyzing their data. In this study,

participants played two of three different video games. To start, every participant, no matter if

put in the control or test group, started by playing Tetris Classic for 2 min in order to reduce

physiological impact (Arriaga et al., 2011). After this, participants were randomly assigned to

either play the violent game, Unreal Tournament (Epic Games & Digital Extremes, 1999), or the

nonviolent game, Motocross Madness (Rainbow Studios, 1998), for a period of 7 min. Following

gameplay, participants were then shown a set of pictures from the International Affective Picture

System (Center for the Study of Emotion and Attention, 1999) in order to evaluate emotional

responses (Arriaga et al., 2011). These pictures included a set of 10 unpleasant pictures, 12

neutral pictures, and 10 pleasant pictures, these pictures were shown in a random order to the

participant. Then, the participant played their assigned video game for another 4 min. After this,

participants' aggression level was measured by using methods also used by Anderson and Dill

(2000) and Hasan et al. (2013); participants were told they were competing in a reaction-time test

and the goal was to be quicker than their partner and the winner would then distribute a noise

through a headset to the loser. The intensity and duration of the noise given was used to measure

aggression (Hasan et al., 2013). The participants then filled out a demographic survey which included information regarding which video games they had played in the past three months, the amount of time spent playing said games, and their evaluation of how violent these games were, as well as other demographic information (Arriaga et al., 2011). The results showed that participants with more violent game experience previous to the study showed higher levels of aggression than participants with less experience. Arriaga et al. (2011) believed that this should not be interpreted as people having less experience with violent video games are not affected by the game; this could just be due to the participant not knowing how to get into the thick of the violence of the game.

Yang, Huesmann, and Bushman (2014) tested the stereotype that men tend to be more violent and aggressive than women. They believed that having both male and female participants would show more aggression when playing as a male avatar rather than a female avatar. To test this, participants were randomly assigned to either play Street Fighter IV (Capcom & Dimps, 2008) or Virtua Fighter (Sega-AM2, Suzuki, & Ishii, 1993) as either a male or female avatar for a 15 min period. Following gameplay, participants completed a survey on an irrelevant topic. The participants were led to believe that their choices were being put into a lottery for what their partner would end up eating. Unbeknownst to the participants, the lottery was rigged to choose hot sauce. The amount of hot sauce the participant chose for their partner to eat was used to measure aggression level (Yang, et al., 2014). The results showed that when playing as a male avatar, participants were found to give their partners more hot sauce, and were therefore considered to show more aggression than when playing as a female avatar for both male and female participants (Yang et al., 2014).

In the current research, an in-person study was conducted to measure the relationship between violent video games and aggressive tendencies. Participants were randomly assigned to either play a violent video game (Grand Theft Auto V [GTAV]; Rockstar Games, [2014]), or a nonviolent video game (Stardew Valley; Barone & Sickhead Games, [2016]) for 30 min. Before and after gameplay, participants answered how they would react to five different situational vignettes to measure changes in aggressive tendencies before and after gameplay and they also filled out a demographics survey. Research questions included 1) Do violent video games stimulate aggressive tendencies in players? 2) Is there a difference in aggression level based on gender? 3) Does the age that an individual begins playing video games have a relationship with the level of aggression stimulated when compared to a less experienced gamer?

Method

Participants

In the current in-person study, there were 16 participants whom were recruited through flyers placed in the Library and Academic Resource Center and Young Hall at Lindenwood University (see Appendix A), and through the Lindenwood Participant Pool (LPP). The LPP allows Lindenwood students enrolled in select psychology, anthropology, sociology, and criminology and criminal justice, classes to volunteer and participate in research studies in order to gain extra credit towards their class grade. To participate in this study, participants were required to be 18 years of age or older, as well as have the ability to see, hear, and manipulate the gaming console. Due to technological errors, only 15 of the 16 participants were used in data analysis. Of these participants, the age ranged from 18 to 26; 10 participants identified as women, and 5 identified as men.

Materials and Procedure

In recruitment, deception was used in describing what exactly was being measured throughout the study. Participants were told that a relationship between violent video games and conflict resolution was being looked for so that they did not know aggression was actually being measured. This was so that participants did not answer to what they believed was morally correct and answered each situation truthfully.

At the beginning of the study, participants were given an informed consent document (see Appendix B). Once participants agreed to continue with participating in the study, they started by taking a pretest created through Qualtrics consisting of a set of five situational vignettes which were retrieved from Tremblay and Belchevski's (2004) study. These vignettes consist of three different sets of eight situations that depicted intentional acts that are meant to provoke aggressive responses in the participants (intentional vignettes), unintentional acts that could provoke aggressive responses in participants (unintentional vignettes), and acts that may or may not be interpreted as intentionally provoking aggressive responses in the participants (ambiguous vignettes; Tremblay & Belchevski, 2004). An example of an intentional vignette is "You are standing at the bar waiting for a drink you ordered. A girl shoulders you roughly out of the way and gives you a dirty look," (Tremblay & Belchevski, 2004). An example of an ambiguous vignette is "You walk by three boys playing street hockey. As you pass them you hear one laughing, then the rubber ball hits you in the head," (Tremblay & Belchevski, 2004). An example of an unintentional vignette is "Your friends go to lunch without inviting you. When they see you after lunch, they tell you that they thought you had gone home early and apologize for not inviting you," (Tremblay & Belchevski, 2004). In this study, I examined the relationship

between trait aggression and aggressive behaviors found from responses in their situational vignettes.

In the current study a total of 10 vignettes were used: 4 of the ambiguous vignettes, 4 of the unintentional vignettes, and 2 of the intentional vignettes were used, with 2 of the unintentional, 2 of the ambiguous, and 1 of the intentional being designated as one set and the remaining vignettes were designated as the second set (see Appendix C). The two sets of 5 vignettes were randomized through Qualtrics to designate which set was given as the pretest and which set was given as the posttest so that it was different for each participant. The responses to the vignettes were the same multiple-choice options for every vignette. Each set of multiple-choice responses was the same for every vignette throughout the survey. Some of the responses were taken directly from Tremblay and Belchevski's (2004) survey and some responses were created. All of the responses from Tremblay and Belchevski's (2004) survey were not used as they were seen as all being fairly aggressive responses, and there was a need to have some responses that were not too pessimistic, but not aggressive as well. All of these responses were therefore rated on a scale of being least to most aggressive.

In between the pre- and post-test vignette surveys, participants were systematically selected to either play a VVG on the XBOX, or a CVG on the PlayStation 4. Systematic selection was used by having every other person play either the VVG or the CVG. The participants in the violent game group played GTAV (Rockstar Games, 2014). GTAV (Rockstar Games, 2014) allows the gamer to play as one of three criminals in the fictional city of Los Santos and follows the storyline of their different heists. This game also allows a free-world playing aspect where the gamer can roam around the town and do as they please – whether this involves killing other characters, stealing cars, or doing random tasks such as participating in

triathlons. The participants in the calm game group played Stardew Valley (Barone & Sickhead Games, 2016) which is a more calming game involving a farm simulation where the main character is allowed to interact with different citizens, go fishing, gathering, and mining in the cave and growing crops on their farmland.

Following gameplay, participants completed the posttest of the other five situational vignettes and finished by responding to five demographic questions. These questions included information on age, gender, how frequently they play video games per week, when they started playing video games, and a list of up to five video games that they currently play on a regular basis (see Appendix C).

Once the session was completed, participants were debriefed on the actual intentions of the survey, being that we were measuring the relationship between violent video games and aggressive tendencies and were able to ask any questions (see Appendix D). After all data collection was complete, I exported my data from Qualtrics into Excel. I then coded my data and analyzed it using an independent samples t-test on Excel to find baseline aggression scores, the VVG and CVG groups, age beginning video game play, and for gender comparisons. When dividing the experience group, less experience was considered 1 to 10 years of playing video games, and more experience was considered 11 to 20 years playing video games.

Results

I hypothesized that 1) VVG cause an increase in aggression in players; 2) People who identify as male will have a higher level in increase in aggression than other genders when playing the VVG. There will be no difference between people who identify as men and people who identify as women in level of aggression when playing the CVG; 3) People with more

experience playing video games will have less increase in aggression compared with less experienced players. I used SPSS in order to analyze my data.

When analyzing baseline aggression scores, it was found that there were no preexisting differences in aggression scores between participants who were assigned to play GTAV ($\bar{x}$ = 16.43, s = 3.41) and those who were assigned to play Stardew Valley ($\bar{x}$ = 14.00, s = 3.16), $t(13)$ = 1.43, p = .18). This was tested in order to confirm that there were no differences between groups before gameplay occurred.

When observing the first hypothesis, VVG cause an increase in aggression in players, I found that my hypothesis was not supported, nor statistically significant ($t(13)$ = -0.27, p = 0.40). However, numerically speaking, Stardew Valley ($\bar{x}$ = 0.71, s = 4.61) showed a higher increase in aggression levels than in GTAV ($\bar{x}$ = 1.38, s = 4.90).

The second hypothesis, people who identify as men will have a higher level in increase in aggression than other genders when playing the VVG, whereas there will be no difference between people who identify as men and people who identify as women, was also found to be not supported, nor statistically significant (GTAV [$t(5)$ = 0.92, p = 0.20]; Stardew Valley [$t(6)$ = 0.17, p = 0.87]). However, numerically speaking, men (GTAV [$\bar{x}$ = -1, s = 1.41]; Stardew Valley [$\bar{x}$ = 1, s = 4]) showed less increase in aggression when playing both games compared to women (GTAV [$\bar{x}$ = 1.4, s = 5.41]; Stardew Valley [$\bar{x}$ = 1.6, s = 5.81]).

The third hypothesis, people with more experience playing video games will have less increase in aggression compared with less experienced players, was supported and found to be statistically significant ($t(13)$ = 2.49, p = .03). This meaning that people with more experience ($\bar{x}$ = -1, s = 4.18) with video games had less increase in aggression than people with less experience ($\bar{x}$ = 4.17, s = 3.49) with video games.

Unrelated to the hypotheses, it was also asked what video games participants currently play on a regular basis, as well as the number of hours a week they spent playing video games. Of this, the most common games mentioned were Mario Kart (Nintendo, 2017), Call of Duty: Modern Warfare (Infinity Ward, 2019), and Fortnite (Epic Games & People Can Fly, 2017). The average amount of time spent playing video games a week was 10.2 hours.

<div align="center">**Discussion**</div>

Possible reasoning's for my first hypothesis being unsupported are that some participants that were selected to play Stardew Valley did not seem enthused to be playing the game. Phrases such as "this is boring," and "do I have to play this the whole time?" were overheard during their gameplay. This could show their frustration in not getting to play the game that they wanted to (being GTAV), and therefore could have increased their aggression. Another factor at play could be that all players could hear the noise coming from the other participant's game as we had two participants playing and neither had headphones during their gameplay. Regarding participants who were selected to play GTAV, very few of them actually acted violently during their gameplay. As they were able to use the open world aspect of the game and play however they liked, the majority of these participants decided instead to drive boats and obey traffic laws during their entire 30 min. session. Only a select few of the participants decided to follow missions which required them to act violently or chose to act violently outside of missions.

Regarding my second hypothesis being unsupported, possible reasoning for the men having less aggression than the women could be solely due to not having very many men participants, being that there were only five. This result could also play into the stereotype that men play more video games than women. When the men played the games, they seemed much

more relaxed and experienced with video games than the majority of the women participants, which could therefore have had an effect on their aggression levels.

Some reasoning for my third hypothesis being supported could be that in having more experience playing video games, there would be less frustration in having to figure out how to play the game compared to less experienced participants. In having less experience with video games, it can cause frustration with not knowing the controls for the game and can become really frustrating when objectives do not come with ease. With more experience, it is not as hard to get farther in missions (had they chose to play the missions) which would prove to be less frustrating and therefore show less increase in aggression.

When data collection was taking place, a few things occurred that could potentially have an influence on how participants played their selected game and responded to the different vignettes. Some of the participants had outside people continuously coming into the gaming lab and conversing while they were partaking in the study. One of these outsiders decided to stay in the lab and scream at the screen that a participant was playing GTAV on, telling her what to do, and making remarks at the game.

Another participant's data was unable to be used as when they were taking their survey, they did not stop between the pretest, gameplay, and the posttest. That is, after they took the pretest, instead of pausing so that they could play their selected game, they ended up moving on to the posttest and finishing all surveys at once. This was not noted until after gameplay had taken place. Their data was discarded from the results.

Some limitations to the study are that only 16 participants took part in the study, with only 15 being able to be used in data analysis. Having more participants could change the results found and could therefore gain more information on the topic. Another limitation could be that

headphones were not used during gameplay. Therefore, when two participants were playing at the same time, they each could hear the other game being played. This could have had an effect on gameplay and responses to the vignettes. Another limitation could be that participants wanted to pick the most politically correct answer to the situational vignettes no matter what game they played.

In future research, I would take more precautions at the very beginning of the study to keep outsiders out of the gaming lab. I also would have headsets for each gaming participant, or only test one participant at a time as opposed to two. Future research could also explore the difference between multi-player and single-player games, or different types of VVG (sports games compared to killing aliens/zombies or killing humans). To prevent having politically correct responses to vignettes, future research could also include a different method of measuring aggression levels, such as how Anderson and Dill (2000) measured aggression through levels lengths of noise participants gave to their "opponent".

The implications of this study help us to look at what could be affecting violence in current society. Since VVG are being used as a factor relating to actual violence, this study can help aid the conversation. As my results showed that GTAV, the VVG, had less increase in aggression compared to Stardew Valley, the CVG, it truly shows that sometimes it is not the VVG that are the sole reasoning for aggression in people. I think continuing research on VVG and aggression can help aid toward the concept if they are a root for violence in society, or if we should be looking at different variables. These results and similar research can also aid in assisting parents decide which games they want their children to be playing, as well as how much supervision should be enacted. Looking at gender differences and experience differences

also plays a huge role in showing the differences between the two groups. Knowing these

differences can help us in assessing individuals for their aggression and violence.

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Appendix A

Flyer Recruitment Document

1-hour participation

30 minutes of game play (Grand Theft Auto V or Stardew Valley)

In LARC Gaming Lab (3rd floor)

Sign-Up through Signup Genius!

https://www.signupgenius.com/go/70A054AA4A622A3FD0-video

PARTICPANTS NEEDED!
VIDEO GAMES & CONFLICT RESOLUTION

QUESTIONS?

Contact Megan Hamilton at

mth728@lindenwood.edu

Appendix B

Informed Consent Document

LINDENWOOD

Research Information Sheet

You are being asked to participate in a research study. I am conducting this study to see if there is a relationship between violent video games and conflict resolution. During this study you will take three separate surveys: a demographic survey, a pre-test, and a post-test, as well as play a video game for 30 minutes. You will be randomly selected to either play Grand Theft Auto V (GTAV) or Stardew Valley. Your gameplay will be taken note of in order to record what types of behavior has occurred during gameplay. These notes will not include any identifiable information.

Information About the Games

GTAV (Rated M 18+) is an open world game where you assume the role of a criminal to play any way you like or choose to follow the storyline. Within the game, you are able to use melee attacks, firearms and explosives to fight enemies or civilians within the world. You are also able to carjack vehicles and are able to run over civilians while driving the vehicle. There are many different shops within the game – including a strip club that has naked women. If you commit any sort of crime, your "wanted" level goes up and the cops chase you down; in order for them to leave you either have the option to hide or fight back. When injuring others or becoming injured yourself, blood can be seen on the bodies. This game can be seen as disturbing to some and could therefore cause some psychological harm.

Stardew Valley (Rated E 10+) is an open-world farming simulation game. The premise is that you inherited a farm and that you are free to grow and harvest crops, raise livestock, fish, craft, mine, and interact with townspeople. When in the mines, players do fight different "mine monsters," to which some emit splashes of blood when defeated. There is no known psychological harm to adults associated with this video game.

The entire study will take less than one hour of your time to complete.

Your participation is voluntary. You may choose not to participate or withdraw at any time,

including during the video game play.

There are no risks from participating in this project. There are no direct benefits for you

participating in this study.

We will not collect any data which may identify you.

If you are in the LPP you will receive four extra credit points in the course for which you signed up for the LPP. You will receive extra credit simply for completing this information sheet. You are free to withdraw your participation at any time without penalty. Participants who are not part of the LPP will receive no compensation beyond the possible benefits listed above. However, your participation is an opportunity to contribute to psychological science.

We will do everything we can to protect your privacy. We do not intend to include information that could identify you in any publication or presentation. Any information we collect will be stored by the researcher in a secure location. The only people who will be able to see your data are: members of the research team, qualified staff of Lindenwood University, representatives of state or federal agencies.

Who can I contact with questions?

If you have concerns or complaints about this project, please use the following contact information:

Megan Hamilton: mth728@lindenwood.edu

Dr. Michiko Nohara-LeClair: mnohara-leclair@lindenwood.edu

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

Appendix C

Aggression Measure & Demographic Survey

Violent Video Games & Conflict Resolution

Start of Block: Group A

Q1 The following questions include a variation of situations. After reading each situation, chose

which statement fits how you believe you would react to the situation at hand.

Q2 As you are giving a speech in front of your class, you notice a couple of students whispering,

laughing, and rolling their eyes at you. As you finish your talk and walk back to your seat, you

hear one student saying "What a bunch of nonsense."

⚪ Do nothing (1)

⚪ Distance self from instigator (2)

⚪ Say something to elicit an apology or acknowledgment (3)

⚪ Say something to try to make the instigator feel badly (4)

⚪ Yell or swear at them (5)

⚪ Threaten them if the situation were not resolved (6)

⚪ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q3 You are at a local dance club. While you are dancing a male stranger bumps into you very roughly.

◯ Do nothing (1)

◯ Distance self from instigator (2)

◯ Say something to elicit an apology or acknowledgment (3)

◯ Say something to try to make the instigator feel badly (4)

◯ Yell or swear at them (5)

◯ Threaten them if the situation were not resolved (6)

◯ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q4 You are carrying a heavy load of groceries up to a check-out line at the grocery store and just as you are about to enter in line, someone cuts in front of you. You end up dropping some things on the floor.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q5 You are having dinner at a restaurant with some friends. A man and a woman at the table next to you are arguing. At one point the man who appears to be angry gets up and bumps into you accidentally spilling your drink on your shirt.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q6 You bring your car to the garage for an oil change. When you return home you notice that oil is leaking from underneath your car. You call the garage and the Service Manager asks you to bring the car back so that someone can look at it.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

End of Block: Group A

Start of Block: Group B

Q8 The following questions include a variation of situations. After reading each situation, chose which statement fits how you believe you would react to the situation at hand.

Q9 You are at work trying to finish a job. You see your co-worker, who was supposed to be

helping you, on the telephone. She has been talking for over half an hour with a friend. You ask

her for some help but she tells you to get lost.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q10 You go to your work and you are in a bad mood. As you walk in the office, a coworker

teases you about something that you are wearing.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q11 You walk by three boys playing street hockey. As you pass them you hear one laughing,

then the rubber ball hits you in the head.

◯ Do nothing (1)

◯ Distance self from instigator (2)

◯ Say something to elicit an apology or acknowledgment (3)

◯ Say something to try to make the instigator feel badly (4)

◯ Yell or swear at them (5)

◯ Threaten them if the situation were not resolved (6)

◯ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q12 Two of your male friends who have been drinking get into a physical fight. You try to stop

them from fighting but one of them punches you in the stomach accidentally.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

Q13 You are at a bar and a very drunk guy dancing next to you steps on your foot and spills his

beer all over your new shirt.

○ Do nothing (1)

○ Distance self from instigator (2)

○ Say something to elicit an apology or acknowledgment (3)

○ Say something to try to make the instigator feel badly (4)

○ Yell or swear at them (5)

○ Threaten them if the situation were not resolved (6)

○ Use physical force (ex: push or grab) if the situation were not resolved (7)

End of Block: Group B

Start of Block: Block 2

Q7
Please pause

 and

raise your hand.

Q24 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

End of Block: Block 2

Start of Block: Demographic Questions

Q14 How do you identify your gender?

○ Female (1)

○ Male (2)

○ Self-Identify (3) _____

Q15 What is your age in years?

_____

Q16 At what age did you start playing video games?

_____

Q17 How many hours per week do you currently spend playing video games?

○ I do NOT play any video games (1)

○ Average hours of play per week: (2)

_____

Display This Question:

If How many hours per week do you currently spend playing video games? = Average hours of play per week:

Q18 List up to **five** video games that you currently play on a regular basis:

_____

Q20 Which game did you play today?

○ Grand Theft Auto V (1)

○ Stardew Valley (2)

End of Block: Demographic Questions

Appendix D

Debriefing Statement

Thank you for participating in my study on violent video games and aggressive tendencies!

In this study you were randomly chosen to either be in the control group, or the test group. The control group played the "calm game," Stardew Valley, while the test group played the "violent game," Grand Theft Auto 5.

The situational vignettes were designed to measure level in aggression. Each response was rated from least to most aggressive. To find the difference in aggression level, I will take the difference between the pretest and posttest responses.

I am looking to see if playing violent video games results in an increase in aggressive tendencies, as well as if there are gender differences, as well as differences with level of experience – being how long the participant has been playing video games in their lifetime.

If you have any questions or are interested in the results, please feel free to contact Megan Hamilton at mth728@lindenwood.edu.

Thank you again for participating!

Spring 2020 PSY48000 Psychology Research Lab

Explicit and Implicit Attitudes towards People with Disabilities

Abby Right[‡‡]

Objective: *Explicit and implicit attitudes play a role in disability discrimination. The purpose of this study was to look at the relationship between explicit and implicit attitudes towards people with disabilities.* ***Method:*** *Participants (N = 78) were asked to complete an online survey with 10 questions asking them to rate the extent to which they agree or disagree with questions measuring explicit attitudes. Participants then completed an Implicit Association Test (IAT) looking at disabilities. The IAT measured participants' accuracy and speed when sorting pictures of either abled-body or disabled-body and words associated with "good" or "bad." Participants' scores on each measure were used to run a correlational analysis.* ***Results:*** *The results showed a statistically nonsignificant positive relationship between explicit and implicit attitudes, r(76) = .095, p = .4. Participants who did not know someone with a disability had a stronger correlation, r(76) = .2, p = .2, than those who did, , r(76) = .03, p = .2.* ***Conclusions:*** *Looking at the average explicit score, M = 60, can show that participants explicitly have positive attitudes towards people with disabilities. While the implicit average score, M = -.63, shows participants might implicitly favor people without disabilities over people with disabilities. These scores reveal that people may explicitly act one way but implicitly think the other. Being aware of these attitudes can help us to open up and talk more about the biases people with disabilities face and help reduce the stigma.*

In 2017, the number of people living in the United States with a disability was 40,675,305 (Lauer & Houtenville, 2018). Even though there are many people with disabilities in society, there is still stigma and discrimination surrounding disabilities, which could be due to negative explicit and implicit attitudes some may have towards people with disabilities. Explicit attitudes or biases are ones we are aware of at the conscious level, while implicit attitudes or biases are at the unconscious level; we are not aware of them. These two types of biases can help to explain different behaviors people might have.

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Friedman (2019) conducted a study looking at the implicit and explicit biases family

members of people with disabilities might have. To test this, Friedman (2019) used the Disability

Implicit Association Test (IAT) (Greenwald, et al., 1998). This version of the IAT measures the

response time a person has when answering the questions as well as the accuracy of their

responses to detect implicit biases. Friedman (2019) found that while family members of people

with disabilities may believe they have no negative explicit biases toward people with

disabilities, they still have negative implicit biases towards people with disabilities.

Kallman (2017) looked more in-depth at implicit biases towards people with disabilities

and if negative biases were changeable. Using an online participant pool at a university,

participants were sorted into either a control group or experimental group. Each group was asked

to complete the disability IAT (Greenwald, et al., 1998). The control group took the IAT and

completed a survey afterwards to answer more questions regarding explicit attitudes. In the

experimental group, participants watched three short videos depicting people with disabilities

showing their life and how people with disabilities are not defined by their illness but by their

accomplishments and talents (Kallman, 2017). After the videos, the experimental group took the

IAT and then followed up with the survey. Kallman (2017) found that there was not a

statistically significant difference between the groups. From this study Kallman (2017) seemed

to notice that implicit biases are more engrained and difficult to change than explicit biases.

Coleman et al. (2015) wanted to look at whether people with disabilities who have an

assistance animal receive less negative implicit bias than a person with a disability without an

animal. The participants of this study were 244 college students who first took a survey on

animal ownership and then were asked to complete a Disabilities and Assistance Dog IAT. This

IAT showed pictures of people with a disability with and without a service animal. Coleman et

al. (2015) found a higher positive implicit bias towards people with disabilities with an

assistance animal or dog than without. This study shows that animals can help increase positive

interactions with people who are disabled (Coleman et al., 2015). This also shows that

environmental factors can increase or decrease discriminatory biases towards people with

disabilities.

Another use of a disability IAT comes from VanPuymbrouck et al. (2020). They wanted

to look at explicit and implicit attitudes healthcare professionals had towards people with

disabilities and how that could determine patients' interactions and decisions when it comes to

healthcare. VanPuymbrouck et al. chose to look at existing data from Project Implicit's

Disability IAT. From the database, the researchers had chosen 25,006 participants who were

healthcare professionals including physical therapy assistants, technicians, nursing and home

health assistants, and practitioners. For the explicit measure VanPuymbrouck et al. also used

questions from Project Implicit in which participants rated their preference towards people with

disabilities and people without disabilities using a Likert scale.

VanPuymbrouck et al. (2020) also looked at different correlates of attitudes towards

people with disabilities. These included things like gender, age, ethnicity, political views, and

whether they were close to someone with a disability. The researchers found that participants

who had a family member or knew someone with a disability had lower explicit scores than

participants who did not. VanPuymbrouck et al. found that 83.6% of providers implicitly

preferred abled people. When looking at both attitudes, healthcare professionals had low explicit

but high implicit attitudes towards people with disabilities (VanPuymbrouck et al., 2020).

One place where explicit attitudes towards people with disabilities can be seen commonly

is in the workforce. Some examples could be unfair pay, selection of applicants, harassment, and

neglect of accommodations (McMahon et al., 2008). Many laws have been passed trying to decrease the amount of discrimination that people who are disabled face. The United States passed a law in the 1990s to try and combat discrimination called the Americans with Disabilities Act (ADA). A subsection of ADA specifically protects people from discrimination in job settings. This makes it illegal to deny a person a job, promotion, or accommodations based only on their disability. Companies have to legally grant accommodations for their employees as long as the request is reasonable (McMahon et al., 2008).

Years following the passing of the ADA, there is still discrimination towards people with disabilities. One study found the unemployment rate for people with disabilities was higher than for people without a disability. The rate of unemployment for people with disabilities was 14.2% where for abled people it was 9% (McMahon & McMahon, 2012). The amount of time unemployed was higher as well. For people with disabilities the average number of weeks spent without a job was 25, whereas the average amount of weeks for abled people was 21 (McMahon & McMahon, 2012).

In 1992, Australia passed a Disability Discrimination Act which made discrimination based on a person's disability illegal. This act helped to establish a way to file complaints and reports for people with disabilities who have faced discrimination (Darcy et al., 2016). Darcy et al. (2016) used data from the Australian Human Rights Commission's website to find information on cases and complaints filed. They looked at 987 cases, not only those based on disability discrimination, but other discriminations as well. Of all the cases they analyzed disability discrimination accounted for 37%. Additionally, 33% of these were filed due to unfair conditions in employment and jobs. Most of the cases based on disability discrimination came

from people with mobility disabilities, mental health related illnesses, and HIV/AIDS (Darcy et al., 2016).

While this law played a crucial role in making discrimination illegal, it did not solve the problem. In hopes of solving this issue even more, a law called the Fair Work Act was passed in Australia in 2009. This law was able to help give voices to employees who felt bullied or discriminated against at work (Allen, 2018). There are problems with the Fair Work Act, however; the main issue is the lack of a concrete definition for disability, which can make it easier for cases to be turned down and people to not get the help they need (Allen, 2018).

Graham et al. (2019) looked at pre-existing data from filed complaints of workplace discrimination, specifically discrimination towards people with disabilities. They collected their data from the Equal Employment Opportunity Commission and looked at four different categories regarding the types of disabilities: physical, behavioral, neurological, and sensory impairments. They also separated the allegation types into categories including harassment, suspension and demotion, layoff and termination, and benefits and wages (Graham et al., 2019). People with physical disabilities tended to file the most allegations in all of these categories, except for harassment. People with behavioral disabilities, which the researchers classified as mental illnesses and addiction impairments, had higher allegations in harassment than the other three categories of disabilities (Graham et al., 2019). This study further looks at how people with different types of disabilities might have different experiences with discrimination at their jobs and what discrimination looks like to them.

In Australia, employers can deny accommodation requests for people with disabilities if they think the accommodation will not help productivity, is unreasonable, costs too much, or if they do not think there is a legitimate disability present. Telwatte et al. (2017) asked a sample of

1,598 participants employed as managers or human resources employees to read 12 short stories about fake employees' requests for accommodations. The types of disabilities differed as well as the severity and cost of the accommodations and the researchers used physical and psychological disabilities in their study. The participants had to rate the accommodation request on many different factors, including legitimacy of the perceived disability, if they think the accommodation is necessary, the empathy they felt for the employee, and the perceived cost of an accommodation like the ones presented in real life. They also rated the accommodations on if they were reasonable and if they would grant the person the accommodation in real life (Telwatte et al., 2017). The results showed the greater the ratings for empathy, legitimacy, and necessity, the more likely the participant will accept the request. Telwatte et al. also found requests from those with physical disabilities had higher acceptance rates than requests pertaining to psychological disabilities. This again shows how different types of disabilities might be treated and discriminated against differently.

One study looked at disability discrimination, specifically hiring employees based on the certain type of disability they had (Gouvier et al., 2003). Gouvier et al. had 295 undergraduate participants who were majoring in business or related majors. The participants rated applicants for different jobs on factors such as assumed job performance and employability. The fabricated candidates for each job had similar backgrounds related to the position they were applying for and had a disability in one of four categories: head injury, developmental disability, back injury, or mental illness. Some of the job types this study used for the applicants to apply for included a janitorial job and a phone operator. Gouvier et al. found applicants with developmental disabilities were expected to have higher job performance ratings than those with head injuries or a mental illness. The applicants with back injuries had the highest rate of employment. Overall

results showed across the ratings, physical disabilities received higher scores than mental

disabilities or illnesses (Gouvier et al., 2003). While people with disabilities in general can be

discriminated against in the workforce, people with certain kinds of disabilities might receive

more discrimination.

College students with disabilities can also face large amounts of discrimination. Deckoff-

Jones and Duell (2018) looked at the types of disabilities a college student might have and how

this can possibly change the accommodations they receive. Participants were 223 college

students and were asked to read eight vignettes depicting people with different types of

disabilities trying to receive accommodations. The types of disabilities included visible physical

disabilities, invisible physical disabilities, psychiatric disabilities, and learning disabilities

(Deckoff-Jones & Duell, 2018). After reading about the fake student, participants were asked to

rate how appropriate they think a certain accommodation would be for each disability. Examples

of some of the accommodations included the use of a handicap parking spot, relocating the class

to a lower level, extra time during an exam, and extended time on a project or paper. Deckoff-

Jones and Duell found that the appropriateness of an accommodation was impacted by the type

of disability as well as the type of accommodation. The vignettes of students with an invisible

physical disability or a psychiatric disability were less likely to receive an accommodation even

if the symptoms addressed would be appropriate for a certain accommodation (Deckoff-Jones &

Duell, 2018). The different type of disability that a person might have can increase the amount of

explicit discriminatory biases they might face.

Wilke et al. (2019) also looked at disability discrimination on college campuses.

Participants self-reported perceptions of disabilities and students with disabilities on their

campus. Wilke et al. interviewed 24 residential students over four different colleges; participants

were asked to rate the degree of accessibility they felt the campus had, the accommodations they use, flexibility, and perceived faculty and staff awareness. The degree of awareness and responsiveness that faculty have can either benefit students or become more of a barrier for inclusivity (Wilke et al., 2019). From this study they found that while colleges are willing to work with accommodations, they seem to be generic and not tailored to the specific student which might not be the most helpful; when working on accommodations, abled faculty might overlook issues that people with disabilities might need (Wilke et al., 2019).

The present study aimed to determine the differences between explicit and implicit biases and their relationship with discriminatory attitudes towards people with disabilities. To measure explicit attitudes, this study used the Disability Rights Attitude Scale (Hernandez et al., 1998). Implicit attitudes towards people with disabilities was measured with an IAT (Greenwald, et al., 1998). I hypothesized that there would be a positive correlation between participants' discriminatory explicit attitudes towards people who have a disability and their discriminatory implicit attitudes towards those with a disability. That is, I predicted that as explicit attitudes increase so will implicit attitudes; and if explicit attitudes decrease, implicit attitudes will as well. I also predicted a stronger correlation between explicit and implicit attitudes if participants have or are close to someone with a disability than those who do not know someone with a disability. I predicted this because if a person has or is close to someone with a disability their explicit and implicit belief might be more similar due to being around someone with a disability.

Method

Participants

This study was been approved by the Psychology Program Scientific Review Committee and Lindenwood University's Institutional Review Board before being posted on the internet. Participants were recruited from two social media sites, Facebook and Reddit, as well as the Psi Chi website and through Jennifer Spellazza and the Center for Diversity and Inclusion at Lindenwood University. On Reddit, the survey was be shared via the subreddit, r/samplesize. This subreddit allows students to share their survey projects with other members of the subreddit. To take the survey, participants had to be on a computer with a keyboard and not a mobile device or tablet. If participants were on a device that was not compatible, a screen would pop up asking them to take the survey on a compatible device because of the IAT used.

There were 196 participants in the study; however, only 78 were usable. The other 110 participants did not complete the whole survey and their data could not be used. Out of the 78 participants whose data were usable, 55 identified as female, 22 identified as male, and 1 participant identified as nonbinary. The oldest participant in the study was 69 years old and the youngest was 19 years old, with an average age of 35. There were 47 participants who claimed themselves or somebody very close to them has a disability, where the other 31 said they did not have or know someone close with a disability.

Materials

The survey was created using Qualtrics. The survey contained an informed consent, which was the first thing the participants saw, the explicit and implicit measures, demographic questions, and a thank you statement.

Explicit Attitude Measure

The explicit measure looking at the attitudes towards people with disabilities came from the Disability Rights Attitude Scale (Hernandez et al., 1998). This scale asks questions about people with disabilities and the participant's beliefs towards them and accommodations. This study took 10 questions from the scale to incorporate into it. To answer these questions, a 7-point Likert scale, instead of 6-point like the original (1 is Strongly Disagree, to 7 which is Strongly Agree) was created. A point was added in this study to give participants a neutral choice; neither agree nor disagree. This scale was chosen because it specifically asked questions pertaining to explicit attitudes towards people with disabilities.

Implicit Attitude Measure

For the implicit attitude measure the study used an IAT (Greenwald et al., 1998) with the help from IATgen (Carpenter et al., 2019), a website that helps make IAT tests which can be inserted into Qualtrics. This website also has YouTube videos (Carpenter, 2017a, 2017b, 2017c, 2017d) showing how to make the IAT in more detail.

The test was broken down into targets and attributes. Targets are the two attitudes measuring implicit biases. The attributes are the stimuli which is either pleasant or unpleasant. These appeared on the IAT either alone or with the target biases measured. For this test, the attributes are called good or bad. The words chosen for good were adore, beautiful, friendship, joyful, kind, and lovely. The words chosen for bad were awful, detest, disgust, horrible, sadness, and tragic.

Demographic Questions

The survey asked three demographic questions. One of the questions asked was whether the participant or a loved one has a disability. This question was answered in yes or no form. This question was asked to answer one of my research questions. Other demographic questions included asking the participant's gender identity and age.

Procedure

Creation of the IAT for Disabilities Measure

Targets. The IAT uses targets to determine implicit biases, these are labeled as target A (abled) and target B (disabled) (Carpenter et al., 2019). For this test, instead of words, pictures were selected for the target categories. The disabled target had four pictures: crutches, a person in a wheelchair, a symbol for people who are deaf, and a person who is blind using a walking stick. The abled target had four pictures of a person golfing, a person walking, a person standing, and two children walking (see Appendix A for disabled and abled target pictures). The pictures were taken from Clker.com which has free clipart people can use (Clker).

IATgen (Carpenter et al., 2019) and Shinyapps (Applibs, 2019). When using IATgen it directs users to an app called Shinyapps to start making the test (Applibs, 2019). The page contains information to fill out including the test or survey's name and the attributes and targets. While working on this part of the survey, the YouTube video called "01- Building with Shiny." was used to understand everything (Carpenter, 2017a). After filling everything out on Shinyapps (Applibs, 2019), the survey was downloaded and created in a format compatible with Qualtrics.

Creation of the Qualtrics Survey

To import the IAT into Qualtrics the Qualtrics survey file button, which transfers the information into a QVF file, has to be checked. Once imported, the rest of the survey on was created. The informed consent was then created that will appear at the beginning of the survey. Afterwards the explicit measure was added which will come before the IAT. The last step was to create the demographic questions that succeeds the implicit measure as well as the thank you statement.

Study Procedure

If participants were on a device without a keyboard, they were shown the screen to take the survey on a compatible device. If participants were on a compatible device once they clicked on the link to the survey, they were shown the informed statement. Upon being shown the informed consent form, participants had the option to agree to participate or decline. If agree was selected, participants would be sent to the next part of the survey. If do not agree was selected, participants would be sent to the end of the survey and shown the thank you statement.

After they agreed to participate in the study, participants were met with the explicit measure questions. There were 10 questions total and they rated each question by how much they agreed or disagreed with the given statement. Once participants completed these questions, the disability IAT began. The IAT consisted of four trials where each trial showed different combinations of pairings between the target and the attributes as well as the position of the keys associated with each pairing. The screen that popped up had instructions for the participant to read on how to take the IAT. It asked the participants to place their left and right index fingers on the "E" and "I" keys. It mentioned there are two categories at the top of the screen, and that they

would have to use the keys to put an image or word in the correct category. If participants made

a mistake a red X would appear, and they had to fix it to continue.

 To begin, participants pressed the space bar, as mentioned on the screen, and were asked

to complete it as fast as they could while making the least amount of errors. The first category

they saw were the targets, disabled or abled, and they had to place the pictures in the correct

categories. The next section was separating words into the two different attribute categories:

good and bad. After doing this, the participants had both the targets and attributes at the same

time (see Appendix B for an example). After completing the IAT, participants were asked to

complete some demographic questions.

Once they had done all this, the survey was completed and the thank you statement

appeared. This thanked the participants for being a part of the survey and explained the

hypotheses of the study. This also included the primary investigator's contact information if

participants were interested in learning more or would like to see the finished paper.

Scoring

Explicit Attitude Measure. To score the explicit attitude measure, I took each

participant's answers and summed them up to get a number which would be considered the

participant's explicit attitude score. If a person did not answer a question, it would result in a

score of zero. Lower scores indicated higher explicit prejudicial attitudes than higher scores.

Implicit Attitude Measure. To score the implicit attitude measure, I went onto Qualtrics

and clicked on the Data & Analysis tab. Once there I clicked export data and then selected the

button "Use Legacy Exporter" and made sure the "CSV" button was checked. From there I

clicked download and opened the IATgen website to get to the Shinyapps (Applibs, 2019).

When the Shinyapps (Applibs, 2019) loaded, I clicked the "Analyze IAT" tab. Next, I clicked the browse button and uploaded the file I got from Qualtrics containing the data. This gave a lot of information including the number of participants, *d*-score mean and standard deviation, *p*-value, and Cohen's *d*. It also gave participants' individual *d*-score means which is how I got their implicit measures score. If the score was positive then it means the participant had a preference towards target A, or the disabled target. If the score was zero, the participant had no preference and if the score was negative then the participant had a preference towards target B, or the abled target.

Data Analyses

To analyze the data, I used Excel and ran three different correlations. The first correlation I ran was on the sample's overall implicit and explicit scores. The next correlation was on the implicit and explicit scores of participants who said yes to having or knowing someone with a disability. The third correlation as on implicit and explicit scores of participants who said they do not have or know anyone with a disability.

Results

Among the participants in the study, a positive relationship was found between explicit attitudes and implicit attitudes, $r(76) = .095$, $p = .4$, however it was not significant. The correlation run for explicit and implicit attitudes of participants who have or know someone with a disability was positive, $r(76) = .03$, $p = .2$, this correlation was not significant as well. The last correlation run was on participants who did not have a disability or knew someone with a disability and there was a positive relationship between their explicit and implicit scores, $r(76) = .2$, $p = .29$, this was not significant.

Discussion

The first hypothesis for this study was a positive correlation between explicit and implicit attitudes towards people with disabilities. While the results of the study supported this hypothesis, the correlation was not significant. The second hypothesis was that the correlation between explicit and implicit attitudes would be stronger for people who have or are close to someone with a disability than those who are not. This hypothesis was not supported by the results, meaning that implicit and explicit scores were more closely related for people who did not know someone with a disability or have one themselves, than for people who did. These correlations were, however, weak as well.

The average explicit score was 60, which means that the participants had more positive explicit attitudes than negative. However, the average implicit score was -.63, meaning participants favored abled-body over disabled-body. This is different than what I hypothesized, which was that as explicit scores became more positive or higher, so would implicit. This might explain the weaker correlations that the study found. It also can show that people might explicitly act a certain way but implicitly think another which was found in other studies. Friedman (2019) used an IAT to look at family members of people with disabilities implicit attitudes. While people who are close to those with a disability might believe they have no explicit attitudes or biases, there still might be some implicit attitudes they are unaware of.

Another reason for these results could be the explicit measure. These questions could have given away the researcher's intended outcome and led the participants to answer a certain way and not how they really felt. This could explain why there were so many high positive explicit attitudes without flexibility and variability in scores.

For future studies, I would recommend using a different explicit measure that is more subtle and can make participants feel more welcomed in answering how they feel. There were also issues with the implicit measure. Because of the IAT, participants had to use a computer with a keyboard, which narrowed down the number of participants who took part in the study. It made it hard to get participants and I would recommend using a measure that is mobile friendly as well if wanting to do an online study. Since the sample was a smaller sample, the results might not be found in the population. This survey can contribute to current research by having both an explicit and implicit measure on discriminatory attitudes towards people with disabilities in one study.

This study can help to try and decrease negative attitudes towards people with disabilities. It seems that people who are close to someone with a disability might still have negative implicit attitudes. If aware of this, it can help to alter these biases. Providing the public with knowledge regarding disabilities and informing them on stereotypes and biases that are incorrect can change how society views people with disabilities.

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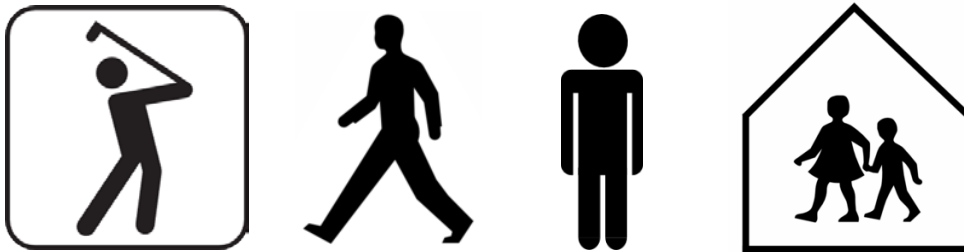
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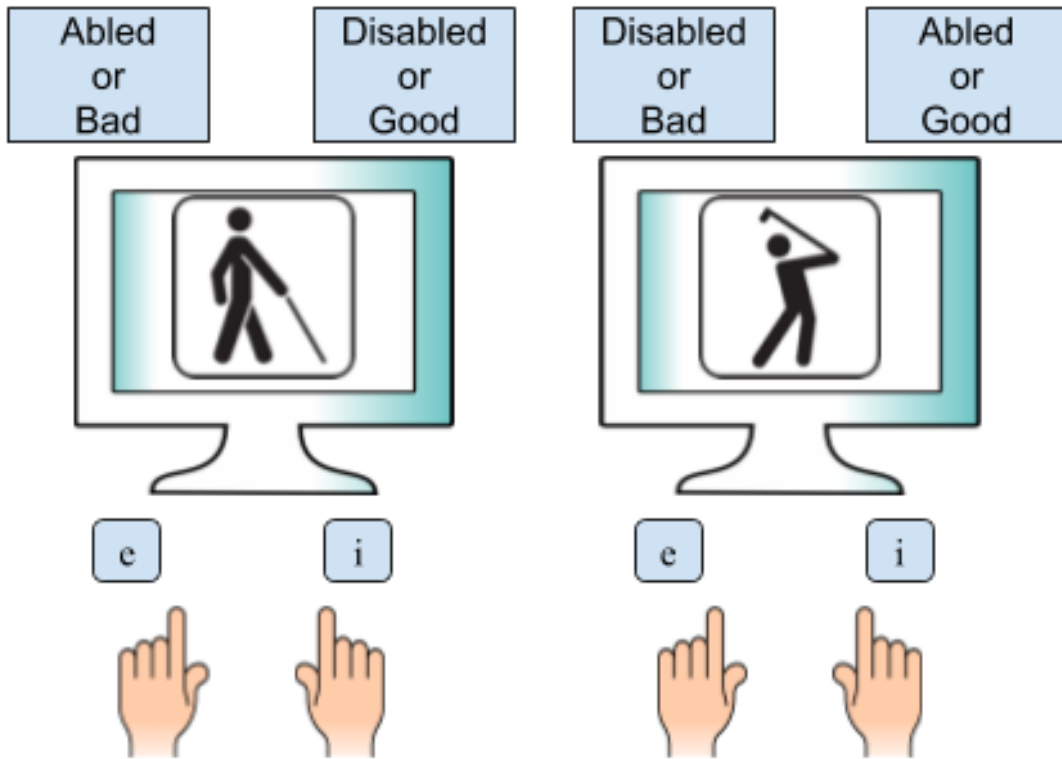
Appendix A

Disabled Target Pictures

Abled Target Pictures

Appendix B

Example of the IAT (Clker)

FIN.

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