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Knowledge and Attitudes toward Persons with Schizophrenia among Hispanic University Students Enrolled in Mental Health and Non-mental Health Disciplines

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KNOWLEDGE AND ATTITUDES TOWARD PERSONS WITH SCHIZOPHRENIA AMONG HISPANIC UNIVERSITY STUDENTS ENROLLED IN MENTAL HEALTH AND NON-MENTAL HEALTH DISCIPLINES

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ABSTRACT

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Schizophrenia is the most severely debilitating, highly stigmatized, and least understood form of mental illness in the world. Schizophrenia affects close to 1.0% of the U.S. population and nearly 21 million people worldwide. Stigma and knowledge toward persons with schizophrenia (PWS) have been examined among different groups, including the general public, mental health professionals, and individuals from various cultural backgrounds. While researchers have explored attitudes toward PWS among Hispanics, little has been published about the attitudues of Hispanics residing near the U.S.-Mexico border who tend to maintain more traditional views about PWS than Hispanics in other parts of the U.S. The present study examined the relationship between attitudes and knowledge toward PWS among 296 undergraduate students residing along the U.S.-Mexico border. The results yielded a small correlation between students' knowledge and attitudes toward PWS. Additionally, while the majority of students reported concern for PWS and a willingness to help PWS, a number of students reported limited knowledge about PWS and a lack of desire to interact with PWS on a personal level. Implications of the findings and recommendations for future research to mitigate stigma toward PWS are discussed.

Keywords: schizophrenia, attitudes, stigma, knowledge, and Hispanic university students

DEDICATION

I dedicate this dissertation to my beloved late mother, Urmilla Sharma, whose willpower and strength have always lived in me, pushing me to endure life's challenges and hardships. Today, my success is also her success. To each and every woman currently in pursuit of accomplishing your dreams, this too, is for you.

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CHAPTER I

INTRODUCTION

Schizophrenia is the most severely debilitating and least understood form of mental illness in the world (Ahmed, Strauss, Buchanan, Kirkpatrick, & Carpenter, 2018; Awad et al., 2016; Evensen et al., 2016; Joshi, Mao, Biondi, & Millet, 2018; Lefort- Besnard et al., 2018; Peer, Warnecke, Baum, & Goreczny, 2015; Pingani et al., 2015). Data from the National Institute of Mental Health ([NIMH], 2018) indicated nearly 1.0% of people in the U.S. are living with schizophrenia and schizophrenia affects nearly 21 million individuals worldwide (World Health Organization [WHO], 2016). The onset of schizophrenia is usually late teens to early 20s and the prevalence of schizophrenia is slightly higher in men than in women (NIMH). Schizophrenia is a lifelong disability, affecting all aspects of functioning, including quality of life (Girard et al., 2017; Margariti, Ploumpidis, Economou, Christodoulou, & Papadimitriou, 2015), daily functioning (Malhotra, Kulhara, Chakarbarti, & Grover, 2016; Strassnig et al., 2015), educational attainment (Tarbox et al., 2014; Wery & Cullinan, 2016), employment outcomes (Evensen et al.; Falkum et al., 2017), independent living (Lipskaya-Velikovsky, Kotler, Easterbrook, & Jarus, 2015; Salzer et al., 2016), and social life (Avery et al., 2013; Hayes, Hawthorne, Farhall, O'Hanlon, & Harvey, 2015).

Because of the nature and severity of schizophrenia, successful evidence-based interventions available to treat this condition are limited (Clark, 2016; Cuevas-Yust, Delgado-Rios, & Escuderp-Perez, 2017; Kapse & Nirmala, 2015; Pandarakalam, 2016; Sivec &

Montesano, 2012). Pharmacological (Bas et al., 2017; Monti, Torterolo, & Perumal, 2017) and psychological (Davis, Schwartz, & Cefus, 2017; Gaudiano et al., 2017; Naeem et al., 2016) interventions are the most effective forms of treatment available for persons living with schizophrenia. However, many persons with schizophrenia (PWS) are subjected to serious discrimination and stigma and, as a result, PWS often view themselves negatively and blame themselves for their condition. This self-deprecating phenomenon is known as self-stigma (Chio, Mak, Chan, & Tong, 2018; Lien et al., 2018; Omori, Mori, & White, 2014) and it is self-stigma that often precludes persons with mental illness from pursuing professional treatment. Moreover, while research indicates stigma toward some mental illnesses has declined over the years (e.g., Corrigan, 2016; Koike, Yamaguchi, Ojio, & Ando, 2018), stigma, discrimination, and violation of the human rights of PWS is common (WHO, 2016). Studies have also shown reduced knowledge regarding mental illness may contribute to negative attitudes such as stigma toward persons with serious mental illness (SMI) (Durand-Zaleski, Scott, Rouillon, & Leboyer, 2012; Hasan, Callaghan, & Lymn, 2014; Mascayano et al., 2016; Sideras, McKenzie, Noone, Dieckmann, & Tiffany, 2015; Smith, Reddy, Foster, Asbury, & Brooks, 2011; Stip et al., 2006). As such, studies examining attitudes and knowledge toward PWS need to be conducted in order to better understand the myriad factors (e.g., age, gender, education, and cultural background) associated with negative attitudes toward PWS as it is often these negative attitudes that inhibit many PWS from seeking mental health treatment..

Background of the Study

Persons with SMI have been subjected to negative attitudes in several forms, including discrimination (Adeyemi, Abiola, & Solomon, 2016; Angermeyer & Matschinger, 2003), stigma (Corrigan, 2016), labeling (Berrios, Luque, & Villagrán, 2003; Corrigan, 1999), and myths

regarding SMI (Heinrichs, 2003; Peer et al., 2015; Pescosolido et al., 2015). The history of negative attitudes toward persons with SMI can be traced back to the 16th century when individuals with schizophrenia were deemed to be possessed by demons (Azaunce, 1995; Corrigan & Penn, 2015). Such demonic-related beliefs have changed over the years; however, persons with SMI continue to be viewed as dangerous which, in turn, perpetuates the ongoing stigmatization and untoward behaviors mitigated against persons with SMI (Corrigan, 2016; Pescosolido et al., 2015). Stigma is one negative attitude that splits the individuals with SMI from the rest of the society. Researchers have conducted myriad studies to define stigma from two views: public stigma and self-stigma (Chio et al., 2018; Corrigan & Rao, 2012). Public stigma entails perceiving individuals with mental illness negatively (Corrigan & Rao; Wood et al., 2015), which leads to self-stigma wherein individuals with mental illness subsequently begin to view themselves negatively (Corrigan & Rao). Thus, public stigma propagates self-stigma among individuals with SMI, making their recovery all the more difficult.

Stigma and Schizophrenia

Stigma toward persons with schizophrenia (PWS) elicits higher levels of negative attitudes than other forms of mental illness (Durand-Zaleski et al., 2012; Magallares, Perez-Garin, & Molero, 2016; Yang et al. 2013). Due to the nature and severity of the disorder, PWS experience higher levels of social distance (e.g., are avoided by others) than people with other forms of SMI. Furthermore, researchers have associated stigma and discrimination with social distance (Angermeyer et al., 2015; Corrigan, Edwards, Green, Diwan, & Penn, 2001; Smith & Cashwell, 2011; Makowski, Mnich, Angermeyer, & von dem Knesebeck, 2016; Yoshii, Yuichiro, Kitamura, Ling, & Akazawa, 2012) in that people tend to distance themselves from those they perceive as being different, including persons with PWS. As such, it would appear

people tend to distance themselves or avoid those they perceive as being different (Corrigan & Penn, 2015). Avoidance of PWS may occur because of some of the behaviors they are known to exhibit are often perceived as unusual or peculiar (e.g., talking to themselves). Such behaviors are also compounded by a ongoing and common perception of the general public that PWS will never recover from their condition and may become violent and unpredictable (Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000; Pingani et al., 2015; Svensson et al., 2014). The impact of public stigma can have detrimental effects on persons with SMI as they tend to denigrate themselves which, in turn, perpetuates self-stigma. For example, reduced levels of self-esteem, decreased self-efficacy, and hopelessness are reported among PWS due to internalized stigma (Park, Bennett, Couture, & Blanchard, 2013; Webb et al., 2016).

Public Stigma and Schizophrenia

The National Alliance on Mental Illness (NAMI, 2008) surveyed community members to measure attitudes toward schizophrenia and found approximately 60% of the general public perceived PWS as violent and only 20% of the general population indicated familiarity with schizophrenia (NAMI). This survey continues to reflect the public's negative attitude and limited knowledge about PWS. For example, Yang et al. (2013) conducted a survey among 153 urban college students to compare stigma toward individuals who were given what the researchers referred to as *psychosis risk labels* (i.e., schizophrenia) vs. individuals with non-psychotic mental illness (i.e., major depression, generalized anxiety disorder). Participants were randomly assigned a vignette describing the person's psychiatric symptoms. The outcome of the study indicated individuals who were given a schizophrenia label were perceived with higher degrees of stigma compared to individuals who were given major depression and generalized anxiety disorder labels. The researchers postulated public stigma concerning schizophrenia is

more negative compared to other forms of mental illness and leads to reduced help-seeking behavior among PWS and related psychotic disorders.

For years, efforts have been made to reduce stigma toward PWS via contact-based interventions (Corrigan, 1999; Corrigan et al., 2016), training programs (Corrigan et al.; Song & An, 2016), and workshops (Peer et al., 2015; Stip, Caron, & Marie, 2006). While showing some positive impact, schizophrenia, nevertheless, continues to be the most stigmatized disorder of all mental disorders (Addington & Lecomte, 2012; Baba et al., 2017; Corrigan et al.; Wood et al., 2015; Yanos, Roe, Markus, & Lysaker, 2015). Durand-Zaleski et al. (2012) surveyed 1000 participants to measure knowledge, attitudes, and behavior reagrding three disorders: autism spectrum disorder, bipolar disorder, and schizophrenia. Durand-Zaleski et al. found among all three disorders, schizophrenia was associated with the most stigma. Specifically, 65% of the participants believed individuals with schizophrenia were dangerous as compared to individuals with autism spectrum and bipolar disorders. This study illustrates despite efforts to mitigate myths and stereotypes regarding schizophrenia, negative attitudes experienced by PWS are clearly more adverse than those experienced by individuals with other severely debilitating mental disorders.

Researchers have conducted numerous studies globally to examine stigma and related negative attitudes toward PWS (Hanafiah & Bortel, 2015; Economou, Richardson, Gramandani, Stalikas, & Stefanis, 2009; Lee et al., 2016; Loch et al., 2013; Pescosolido et al., 2015; Pingani et al., 2015; Wood, Birtel, Alsawy, Pyle, & Morrison, 2014). For example, Loch et al. examined stigma toward PWS among the general population and psychiatrists in Brazil. A total of 1015 participants were interviewed via telephone after being presented with a vignette regarding a PWS. The results indicated old age, familial contact, and locale (e.g., Latin America as opposed

to the U.S.) correlated with the highest levels of stigma among the general population and psychiatrists toward PWS. The researchers also found having a family member with schizophrenia increased stigma toward schizophrenia. Loch et al. recommended conducting an anti-stigma campaigns in developing countries such as Latin America due to their high levels of stigma toward persons with SMI. The researchers also conveyed the need to conduct culturally acclimatized anti-stigma programs among families to combat stigma against PWS.

Pescosolido et al. (2015) conducted an international study across 16 countries (e.g., Brazil, Germany, the U.S.) to examine public stigma toward two disorders: schizophrenia and depression. A total of 19,508 respondents were randomly assigned a vignette describing individuals with either schizophrenia or depression. Key findings included a negative relationship between stigma and knowledge. Pescosolido et al. also found participants reported higher levels of stigma toward PWS than individuals with depression. Moreover, the majority of the participants endorsed statements indicating PWS are unpredictable and have a heightened propensity for violence, a well known myth (Heinrichs, 2003; Peer et al., 2015). Indeed, knowledge regarding schizophrenia continues to predict degrees of stigma among the public toward PWS Additional findings (e.g., Michaels et al., 2014; Sarin & Wallin, 2014) support the ongoing notion that people who experience schizophrenia are dangerous. Consequently, the incessant need for additional research regarding stigma toward PWS and interventions designed to eradicate these negative attitudes is essential to facilitate help-seeking behaviors and improved quality of life among individuals living with schizophrenia.

Stigma, Knowledge, and Schizophrenia

Studies have supported the notion reduced knowledge regarding mental illness may contribute to negative attitudes such as stigma toward individuals with SMI (Durand-Zaleski et

al., 2012; Hasan et al., 2014; Mascayano et al., 2016; Sideras et al., 2015; Smith et al., 2011). Smith et al. surveyed 330 undergraduate students to examine the correlation between knowledge and stigma toward PWS. The researchers found female students and students who had a family member diagnosed with schizophrenia demonstrated increased levels of knowledge toward schizophrenia and displayed less stigma toward PWS than male students. This study illustrates contact with PWS, gender, and knowledge about PWS are crucial factors in mitigating stigma toward PWS.

Sideras et al. (2015) conducted an exploratory study among 145 nursing students to measure stigma and knowledge regarding PWS. The experimental group received a two-phase simulation wherein the first phase involved a one-hour lecture on hearing voices and the second phase of training involved face-to-face interaction with an individual diagnosed with schizophrenia. The researchers found the experimental group who received education regarding schizophrenia displayed lower levels of stigma compared to the control group who received no simulation training. Both the experimental and control groups showed no significant stigma-related differences based on gender, race/ethnicity, age, and religious affiliation. The study further illustrates the negative correlation between knowledge and stigma in relation to schizophrenia and a need to devise educational and experiential-based curriculum regarding schizophrenia to diminish stigma among students, many of whom will work in a professional capacity with PWS.

Ling, Watanabe, Yoshii, and Akazawa (2014) investigated the relationship between stigma and knowledge regarding schizophrenia among parents of adolescents with schizophrenia. The parents' scores on a stigma scale were compared before and after a web-based educational program (i.e., 12 slides regarding the causes, characteristics, symptoms, and

classification of schizophrenia). The researchers found parents' employment (e.g., full-time) and occupational status (e.g., health-related professions and homemaker) had a significant impact on stigma scores. For example, parents who had a full-time job and worked as physicians reported positive attitudes toward PWS whereas parents employed part-time or as homemakers held less favorable attitudes toward PWS. Ling et al. postulated parents from health-related disciplines reported reduced stigma toward schizophrenia as these professionals are likely to receive more information and training regarding schizophrenia compared to parents with non health-related jobs such as homemakers. As such, efforts to increase knowledge among individuals whose employment and social opportunities allows for limited interaction with PWS are essential to continue ongoing efforts to diminish stigma toward PWS.

Race/Ethnicity and Schizophrenia

Researchers (e.g., Hoy & Holden, 2014; Jimenez, Bartels, Cardenas, & Alegria, 2013; Mascayano et al., 2016; Yoshioka, Reavley, Rossetto, & Nakane, 2016) investigated stigma toward PWS based on race/ethnicity and found Asians and Hispanics (compared to Caucasians) tended to perceive PWS as dangerous and, for example, Yoshioka et al. found people in Japan viewed PWS as weak and espoused a general stigma toward mental illness. In the Hispanic culture, people have continued to believe mental illness is caused by external factors. For example, when an individual has a mental illness, the blame is often directed toward the illness and not the individual, which means the cause of mental illness is not within the individual's control (Edgerton & Karno, 1971; Hernandez, Barrio, & Yamada, 2013). According to Weintraub, Weisman de Mamani, and Tawfik (2016), strong families ties among Hispanics foster care and protection of family members with SMI (e.g., Hispanic families protect and support each other in times of crisis). However, many Hispanic families continue to hold

stigmatizing views toward mental illness, which frequently results in significant barriers toward the successful rehabilitation of persons with SMI among the Hispanic population. As a result of heightened levels of stigma toward SMI, there is a poorer prognosis among PWS in both Asian (Yoshioka et al., 2016) and Hispanic cultures (Weintraub et al.) than in other cultures.

Caplan, Little, and Garces-King (2016) compared stigma toward persons with SMI among mental health providers (vs. non-mental health providers) in the Dominican Republic utilizing a qualitative research design. The researchers noted mental health providers who reported experience in working with persons with SMI endorsed lower levels of stigma compared to non-mental health providers with no experience working with persons with SMI. Another finding was mental health providers (e.g., psychiatrists and nurses) reported heightened levels of confidence in providing quality care to persons with SMI compared to non-mental health providers (e.g., hospital administrator and director of nursing). As such, there is a need to provide contact-based interventions for professionals from non-mental health-related fields to reduce stigma and to increase confidence in providing services for persons with SMI.

Mascayano et al. (2016) conducted a systematic study to investigate stigma toward mental illness in Latin America and the Caribbean and found Latin Americans showed more stigma toward schizophrenia than Caribbeans due to cultural differences. That is, people in Mexico perceived individuals with schizophrenia as more aggressive compared to people living in North American and Western European countries. Mascayano et al. also noted cultural and gender-related outcomes in regards to ulitlization of mental health services in Latin America in that women with mental illness and families with a strong belief in *familismo* (cohesion among family members) are less likely to utlilize mental health services. Such evidence suggests the poor functional outcome for women with mental illness and families due to cultural related

stigma toward mental illness. The Mascayano et al. research illustrated a strong association between gender-related factors, most importantly men being viewed as having more power than women. Subsequently, Mascayano et al. suggested assessments and interventions designed to reduce stigma toward persons with SMI should consider cultural features such as gender issues and family roles.

Barrera, Gonzalez, and Jordon (2013) conducted a qualitative study to explore the perceptions of mental health professionals toward persons with mental illness in the Rio Grande Valley located on the U.S.-Mexico border in South Texas. A total of 25 mental health professionals (e.g., psychologists and social-work) participated in the study. The researchers noted mental health professionals identified mixed feelings (e.g., anger, passion, and rage) toward persons with mental illness and felt their Mexican American clients believed mental illness is inherited from one's parents. Barrera et al. further reported Mexican-Americans residing close to the Mexico border seemed to hold different views of mental illness than people from other regions in the U.S. That is, individuals residing on the U.S.-Mexico border may view SMI differently than people from other parts of the U.S. as they may not feel the need to adopt dominant culture's views regarding mental illness because where they reside, they are the dominant culture.

Professionals' Knowledge and Attitudes and toward SMI

Researchers (e.g., Avery et al., 2013; Corrigan, 2016; Hackler, Cornish, & Vogel, 2016; Peer et al., 2015; Pingani et al., 2015; Svensson et al., 2014; Vogel, Bitman, Hammer, & Wade, 2013) have vastly explored factors that foster negative attitudes among mental health professionals (e.g., psychiatrists, psychologists, and psychiatric nurses) toward PWS. Stigma toward schizophrenia has been a strong and consistent barrier to the successful rehabilitation of

PWS (Corrigan, 2016; Pazargadi, Moghadam, Khoshknab, Renani, & Molazem, 2015). For example, Avery et al. surveyed 156 psychiatrists (one group of addiction psychiatrists and one group of general community psychiatrists) to ascertain the relationship between stigma and knowledge regarding SMI. The researchers found both groups of psychiatrists held higher levels of negative attitudes toward persons with dual diagnoses (i.e., substance use and schizophrenia) compared to PWS or substance use alone. Avery et al. concluded each group of psychiatrists was more comfortable with clientele within their areas of expertise, suggesting not only is knowledge regarding SMI positively correlated with reduced levels of stigma among mental health professionals such as psychiatrists but stigma toward SMI may be linked to specific areas of expertise.

Despite positive outcomes regarding efforts to reduce negative attitudes such as stigma toward PWS, there is a need for additional research to design and develop anti-stigma programs (Corrigan, 2016; Corrigan et. al., 2001; Corrigan et al., 2016; Corrigan & Penn, 2015; Mascayano et al., 2016). Emerging studies regarding stigma reduction have focused primarily on mental health professionals (e.g., psychiatrists, social workers, nurses, and psychologists) (Pingani et al., 2015; Svensson et al., 2014). Therefore, the need for additional research to assess the attitudes and knowledge of university students from non-mental health-related disciplnines toward SMI is evident as these individuals are likely to intersect with PWS in multiple settings, including work and the community at large.

There are several factors associated with positive attitudes toward persons with SMI, including prior contact with an individual who has schizophrenia (West, Hewstone & Lolliot, 2014). Previous studies have shown the nature of the contact also influences attitudes toward PWS. For example, increased knowledge and familiarity with PWS as well as prior contact with

PWS are correlated with an increased willingness to work with PWS (Durand-Zaleski et al., 2012; Pingani et al., 2015). Other forms of contact such as open communication with individuals who have schizophrenia have also been shown to increase empathy toward PWS among nursing students (Sideras et al., 2015). Reduced levels of stigma have also been found among individuals who possess empathy and secure adult attachment compared to individuals who exhibit less empathy and fearful adult attachment (Webb et al., 2016). Webb et al. surveyed 347 undergraduate students to measure the relationship between empathy and stigma toward severe and persistent mental illness based on adult attachment style (i.e., secure, dismissive, preoccupied, and fearful attachment). The researchers found students who scored high on the empathy scale reported less stigma than students with lower levels of empathy and a fearful adult attachment style. This study highlights the significance of a secure adult attachment style in predicting degrees of stigma among individuals. Additionally, because positive attitudes such as empathy toward persons with SMI can mitigate stigma, professionals should be exposed to topics and practica related to SMI during their academic pursuits to enhance their levels of empathy toward persons with SMI. Indeed, from a therapeutic context, knowledge, prior contact, empathy, adult attachment style, and enhanced communication among PWS have been shown to reduce stigma and discrimination toward PWS among professionals.

Statement of the Problem

Stigma toward SMI has been extensively researched within university settings (Graves, Cassisi, & Penn, 2005; Hackler et al., 2016; Link, Wells, Phelam, & Yang, 2015; Peer, et al., 2015; Svensson et al., 2014; Vogel et al., 2013; Webb et al., 2016). For example, Pingani et al. conducted a case-control study to measure university students' identification of stigma in Italian newspapers. Specifically, the researchers examined the differences among three groups of

university students: four undergraduate students from a health professionals group (psychiatric rehabilitation majors), four undergraduate students from a non-health professionals group (i.e., journalism, law, economy, and pedagogy major) and one expert group (i.e., one doctoral student in psychiatry, one associate professor of psychiatry, and one full professor of psychiatry). The researchers found the health professionals group reported lower levels of stigma and higher levels of knowledge regarding PWS than the non-health professionals and expert groups. However, the non-health professionals group endorsed higher levels of knowledge regarding services and rights of PWS than both the health professionals and the expert groups. The results indicated students and experts from the health-related fields (e.g., psychiatric rehabilitation) have more knowledge about various mental illnesses due to their expertise in psychiatric subject matter, which also helps to reduce negative attitudes toward persons with SMI. Accordingly, researchers have highly recommended all university students and professionals from various fields (e.g., mental health and non-mental health) receive updated and ongoing information about SMI in order to improve the quality of care and full inclusion of individuals with SMI in society.

Researchers have often suggested the need to educate students about SMI across all disciplines as opposed to only health-related disciplines. West et al. (2014) investigated the relationship between contact with PWS and stigma toward PWS among university students. The authors found students who had prior contact with PWS reported lower levels of desire to avoid PWS compared to students with no prior contact with individuals with SMI. The researchers further noted students who endorsed reduced levels of stigma toward PWS also reported lower levels of anxiety and fear of PWS. As illustrated, prior contact with PWS can facilitate reduced anxiety and fear regarding schizophrenia as well as less desire to avoid PWS . The West et al. study provides further evidence of the importance of creating contact-based interactions among

all university students from diverse fields to reduce negative attitudes such as stigma toward PWS.

Svensson et al. (2014) surveyed individuals from seven different health care fields (i.e., nursing, occupational therapy, physiotherapy, physician, psychology, public health work, and social work) enrolled in a course that focused on mental illness prior to the data collection process. The researchers also surveyed students from one non-health related field (i.e., police students). The researchers found among all groups, students from the public health discipline perceived PWS as being a danger to others and reported PWS would not improve without mental health treatment. Another interesting finding was the majority of the students from the psychology discipline indicated PWS would never recover from their condition. This study underscores the need to implement educational and practicum experiences that contain specific knowledge regarding schizophrenia to improve the attitudes of university students across both health and non-health-related majors.

Peer et al. (2015) surveyed 113 graduate students enrolled in psychology, physical therapy, and occupational therapy programs to examine students' degree of stigma toward PWS. The researchers found students from the psychology discipline rated PWS as less depressed, less anxious, and with higher levels of self-efficacy compared to students from physical therapy and occupational therapy disciplines. The researchers postulated education and training specific to SMI reduced stigma among psychology students toward PWS. This study exemplifies the varying perceptions toward PWS among students from non-mental health-related disciplines and emphasizes the ongoing need to assess students' level of stigma toward PWS across all disciplines. In fact, a study conducted by Hackler et al. (2016) revealed similar results in terms of stigma toward mental illness among students enrolled in undergraduate psychology courses.

The student participants were provided with a video-based intervention regarding experiences of families and friends of persons living with mental illness. The researchers found the video intervention was effective in reducing mental illness stigma toward PWS among the students. The findings of this study provide further evidence of a relationship between stigma and knowledge toward PWS. However, the aforementioned researchers (i.e., Hackler et al.; Peer et al.) used a sample of university students who were predominantly White American (less than 1.0% of the samples was comprised of other racial/ethnic groups), significantly limiting the generalizability of these studies to racial and ethnic minority students. As such, there continues to be a substantial need for research among racial/ethnic minority groups such as Hispanics to examine their attitudes and knowledge toward schizophrenia and other forms of SMI, especially given Hispanics tend to hold more stigmatized views toward SMI and tend to be less informed regarding schizophrenia than other racial/ethnic groups (Barrera et al., 2013; Caplan et al., 2016; Jimenez, Bartels, Cardenas, & Alegría, 2013; Kopelowicz et al., 2015; Loch et al., 2013; Mascayano et al., 2016).

In addition to the limited research regarding racial/ethnic minority attitudes toward SMI, there are few studies designed specifically to compare levels of stigma toward SMI between two or more undergraduate majors. There is also a paucity of mental health-related research designed to explore differences in both stigma and knowledge undergraduate students across disciplines toward PWS (Pingani et al., 2015). Stigma toward PWS has also been reported among students from non-health-related fields (e.g., economy and law majors). Therefore, students from non-health-related fields need to be presented with knowledge and as well as practical experience regarding SMI to combat stigma toward PWS given university students will serve as future professionals working with PWS. Moreover, the stigma has been reported widely

among students at predominantly white universities and previous studies (e.g., Hackler et al., 2016; Peer et al., 2015; Vogel et al., 2013; Webb et al., 2016) have established a relationship between stigma and knowledge. Additionally, only little is known about Hispanic students' attitudes regarding SMI as attitudes toward SMI have been most widely investigated among African American (Masuda, Anderson, & Edmonds, 2012) and Asian students (Han & Pong, 2015; Kim & Zane, 2016; Wang et al., 2016). Consequently, there exists a significant need to examine the attitudes and knowledge of Hispanic university students toward SMI in order to design programs that include educational and training specific to the needs of Hispanic students, especially given the influx of Hispanic students enrolled in universities across the U.S. In addition, improved attitudes and enhanced knowledge could benefit university students across different disciplines as most people are likely encounter PWS at some point In their lives.

Models of Stigma toward Mental Illness

Persons with mental illness have continued to live a challenging life despite available and effective interventions. Stigma, one of the main barriers affecting people lives by hindering their independent functioning, relationships, help-seeking behavior, and employment opportunities (Girad et al., 2017; Falkum et al., 2017; Malhotra et al., 2016). Additionally, stigma has been shown to impact the etiology of mental illness, including schizophrenia (Speerforck, Schomerus, Matschinger, & Angermeyer, 2017; Thibodeau, Shanks, & Smith, 2018). Stigma has been widely discussed among researchers from different disciplines, such as sociology (e.g., Ezell, Choi, Wall, & Link, 2018; Goffman, 1963; Thoits, 2016), psychology (e.g., Corrigan & Watson, 2002; Link & Phelan, 2001; Ong, Ibrahim, & Wahab, 2016), and anthropology (e.g., Klienman & Hall-Clifford, 2009; Kohrt & Mendenhall, 2015). Considering stigma's overall influence on course of mental illness there is a need to examine the evolution of stigma toward PWS from

different perspectives (Corrigan 2004; Speerforck et al., 2017; Thibodeau et al., 2018). After reviewing of literature four different types of stigma models are identified (1) Goffman's (1963) stigma theory, (2) Link and Phelan's (2001) components of stigma, (3) Watson, Corrigan, Larson, and Sells (2007) FINIS model (Framework Integrating Normative Influence on Stigma), and (4) Haslam's Mixed-Blessings Model of Biogenetics (2015).

Goffman's Stigma Theory

Goffman (1963) originally defined stigma and conceptualized a mechanism of stigma in his work on *spoiled identity* (Goffman, 1963). According to Goffman's stigma theory, when a person carries a different attribute (e.g., physical or mental illness), the person's identity is viewed as damaged. For example, the concept of spoiled identity can be explained from two perspectives: stigma perceived by the person having mental illness (i.e., stigmatized) and stigma from the public (i.e., stigmatizer) toward the person with mental illness. The cycle of stigma changes depending on the reactions persons with mental illness receive from others as well as their self-perceptions about their mental illness. The cycle of stigma also alters individuals' identity by impacting actual identity of individual with mental illness. As a result of the public's negative reactions persons with mental illness develop strategies to cope with their mental illnesses in two ways (1) when others' (or stagmatizers) reaction toward persons with mental illness is negative, the person (the stigmatized) reacts in a defensive cowering position and (2) when others' reaction toward persons with mental illness is positive the person (or stigmatized) becomes a hostile bravado which entails in negative self-perception about themselves. Therefore, in both scenarios (i.e., defensive cowering and hostile bravado) the outlook of persons with mental illness is altered due to stigma attached to the disorder. The elements of Goffman's stigma theory are illustrated in Figure 1.

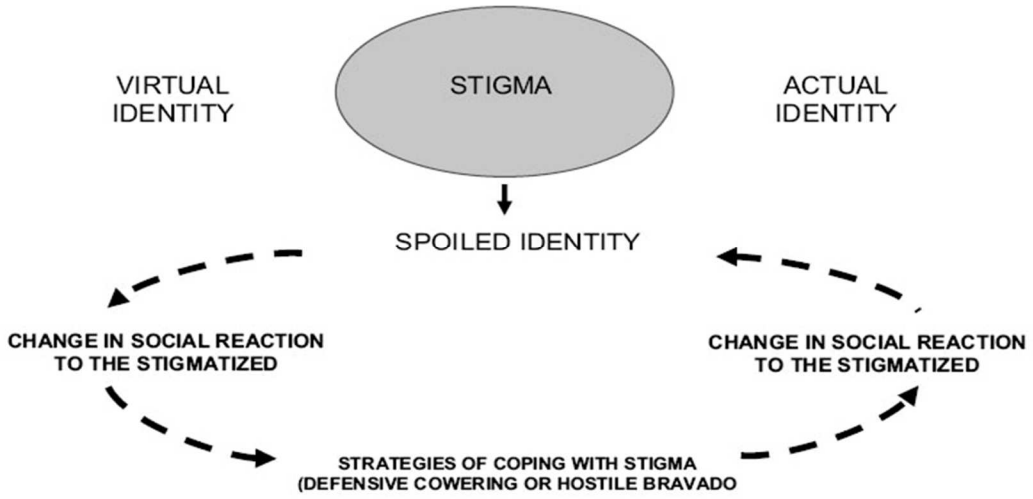

Figure 1: Goffman's Theory on Components of Stigmatization (1963)

Link and Phelan's Components of Stigma

Developed in 2001, Link and Phelan extended the work of Goffman (1963) by addressing five components of stigma which influence public perception toward persons with mental illness. The components of stigma are (1) *labeling*, (2) *stereotyping,* (3) *separation*, (4) *status-loss,* and (5) *discrimination*. Link and Phelan further asserted the subsistence of stigma under the five aforementioned components. For example, when persons have mental illness, they are likely to becoming associated with labels enforced by others. This labeling leads to stereotypes (e.g., persons with mental illness are dangerous) attached to mental illness, which further accentuates separation of persons with mental illness from others. As a result of this separation, persons with mental illness often experience status loss and discrimination. Link and Phelan also added power (i.e., social, economic, and political) as fundamental to the stigmatization of persons with mental illness. For example, persons without mental illness tend to exert social power by labeling, stereotyping, separating, and discriminating against persons with mental illness.

Therefore, dominating against persons with mental illness by exerting power can have debilitating effects on the lives persons with mental illness (Link and Phelan). The components of stigma (i.e., labeling, stereotyping, separation, status-loss, and discrimination) have advanced the work of Goffman's stigma theory as it pertains to the stigmatization of persons living with mental illness.

Watson, Corrigan, Larson, and Sells (2FINIS Model

Watson et al. (2007) designed the Framework Integrating Normative Influence on Stigma (FINIS) model to explain the influences on stigma from multiple social factors, notably the (1) micro/psychological level (i.e., the stigmatizer and the stigmatized) and the socio-cultural level/individual factors (e.g., age, race, ethnicity, and social distance); (2) the meso/social network/organizational level factors (e.g., media exposure, social networks); and (3) the macro/societal-wide factors (e.g., cultural values, health care system, and economy). The Watson et al. FINIS model also incorporates cultural factors, which influence levels of stigma toward persons with mental illness. For example, researchers (e.g., Masuda et al., 2012; Han & Pong, 2015; Kim & Zane, 2016; Wang et al., 2016) have reported higher levels of stigma toward persons with mental illness from a minority cultural groups (e.g., African Americans and Asian Americans). Watson et al. integrated another factor, media exposure which affects people's perceptions toward mental illness. For example, media portrays the image of persons with mental illness both negatively and positively, which changes the level of stigma toward persons with mental illness. The researchers further purported exposure to media and direct contact with person having mental illness influence stigma toward persons with mental illness. The multiple components of FINIS model are illustrated below in Figure 2:

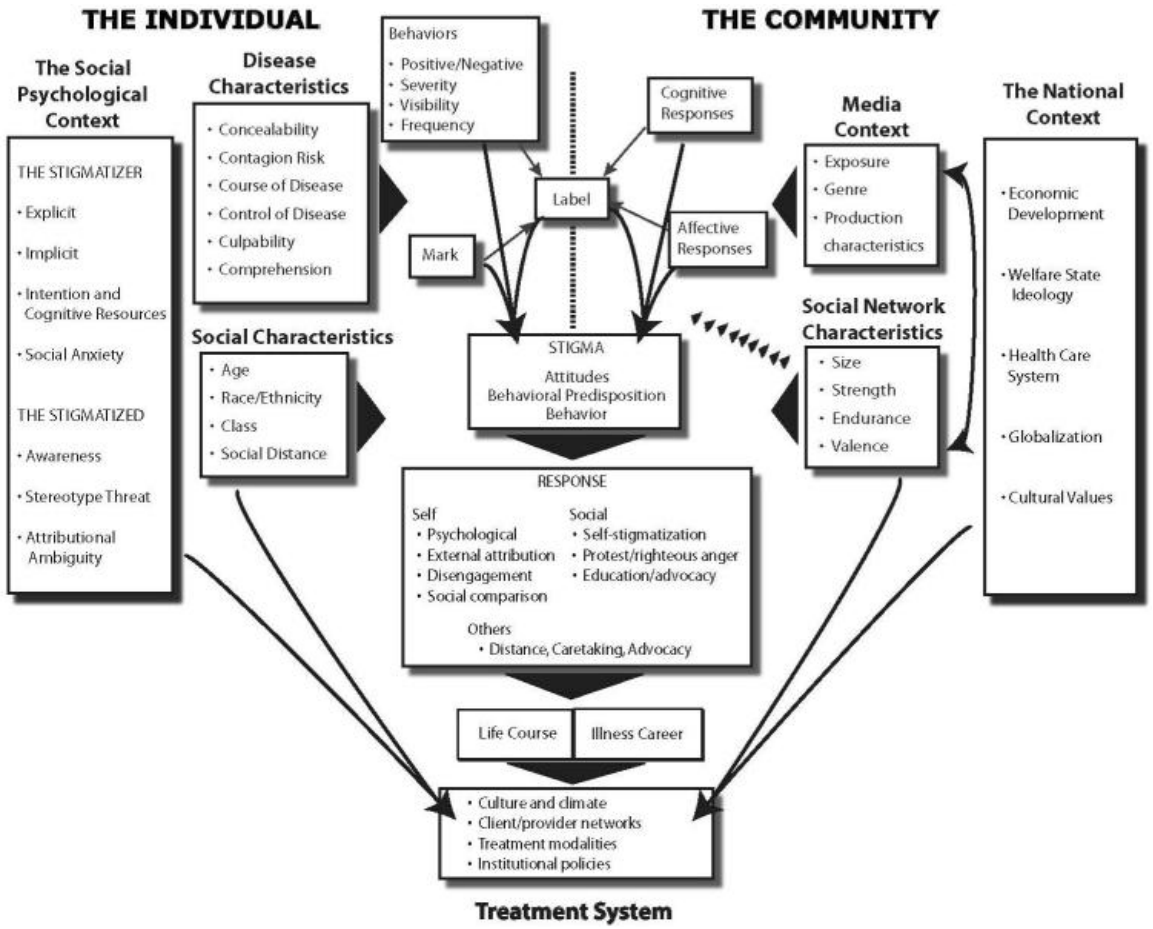

Figure 2: Watson et al. Framework Integrating Normative Influence on Stigma (FINIS) Explaining Stigma from Multidimensional Levels (2007)

Haslam's Mixed-blessings Model of Biogenetics.

Haslam and Kvaale's mixed-blessings model (2015) is a recent theory on stigma designed to explain stigma toward mental illness from a biogenetic context. Haslam and Kvaale (2015) conceptual framework provides a prospect for persons with mental illness as this model claims to reduce the blame of the mental illness from the person living with the mental illness. For example, the biogenetic model is based on two components (1) attribution of uncontrollability (i.e., mental illness is not under person's control), which leads to diminished blame and (2) psychological essentialism. Attribution of uncontrollability occurs when an

individual with mental illness is not held responsible for their mental illness, blame and stigma toward mental illness tend to be reduced or diminished (Bastian & Haslam, 2006). However, the second component of biogenetic model, psychological essentialism carries a negative implication as it leads to public-stigma. For example, in psychological essentialism (i.e., groups of people carries fixed traits/beliefs (Bastian and Haslam, 2006) public forms negative beliefs about persons with mental illness in three ways (a) a desire for social distance, (b) prognostic pessimism (means persons with mental illness can never recover), (c) perceived dangerousness (persons with mental illness are inherently dangerous. Haslam's biogenetic model has provided two opposite components wherein one component claims to lessen blame of mental illness from persons with mental illness and second component solidifies negative public-beliefs about mental illness. The components of biogenetic models are illustrated in Figure 3.

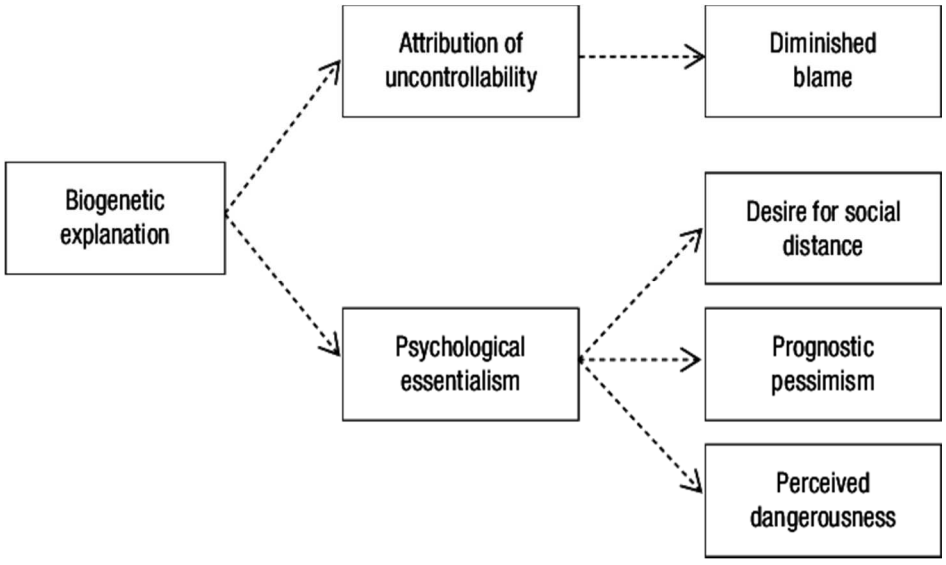

Figure 3: Haslam and Kvaale's Mixed-Blessings Model of Biogenetics (2015)

It is important to address the impact of stigma models to understand the negative influences of higher stigma levels on the lives of PWS. For example, Goffman's (1963) stigma

theory helps to increase understanding of the impact of stigma on an individuals' identity. Furthermore, mental-health professionals can utilize Watson et al. (2007) model by examining the influence of stigma from multidimensional characteristics (e.g., psycho-social factors, media, social-networks, and disease) when designing interventions for PWS. Stigma models can also benefit professionals-in-training (e.g., university students) in that university students can design coping strategies to enhance the identity of individuals living with schizophrenia by examining the components of stigma given in Goffman's stigma theory. Stigma models can also benefit mental health professionals and professionals-in-training as these models are designed to increase understanding surrounding stigma and subsequently reduce stigma toward PWS.

Statement of the Purpose

The primary purpose of the study was to ascertain whether a relationship exists between university students' knowledge regarding schizophrenia and university students' self-reported level of stigma toward PWS. The study has also examined whether a relationship exists between university students' college and their level of stigma and knowledge regarding schizophrenia.

The study will address the following research questions:

1. What is the relationship between university students' self-reported stigma toward persons with schizophrenia and their knowledge regarding schizophrenia?

   HфI: There is no relationship between university students' self-reported stigma toward persons with schizophrenia and their knowledge regarding schizophrenia.

2. What is the difference between university students' gender, age, and race/ethnicity and their self-reported stigma toward persons with schizophrenia?

   HфII: There is no difference between university students' gender, age, and race/ethnicity and their self-reported stigma toward persons with schizophrenia.

3. What is the difference between university students' gender, age, and race/ethnicity and their knowledge regarding persons with schizophrenia?

   HϕIII: There is no difference between university students' gender, age, race/ethnicity and their knowledge regarding persons with schizophrenia.

4. What is the difference between university students across colleges and their self-reported stigma toward persons with schizophrenia?

   HϕIV: There is no difference between university students across colleges and their self-reported stigma.

5. What is the difference between university students across colleges and their knowledge regarding schizophrenia?

   HϕV: There is no difference between university students across colleges and their knowledge regarding schizophrenia.

Significance of the Study

The majority of studies on attitudes and knowledge pertaining to schizophrenia have focused on students and counselors with predominantly non-Hispanic representation; this study can significantly contribute to the existing body of mental health literature by creating a context for studying knowledge and attitudes toward SMI at Hispanic serving institutions of higher education. Additionally, the study assessed attitudes and knowledge regarding SMI and schizophrenia among three distinct college student populations (i.e., health-care, education, and business) to ascertain potential differences among varying student disciplines. This study will also assist mental health professionals and educators in the development of counseling and educational-based curriculum and training programs to combat stigma and increase knowledge

regarding PWS, the most severely debilitating and least understood form of mental illness in the world.

Definitions of Terminology

Hispanic - A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race (U.S. Census Bureau, 2010).

Knowledge - The fact or condition of knowing something with familiarity gained through experience or the association or acquaintance with or understanding of a science, art, or technique (Webster, n.d.).

Person with Severe Mental Illness (SMI) - A person with a psychiatric disability diagnosed with a major mental health disorder (i.e., schizophrenia spectrum disorder, severe depression, or bipolar disorder) that is substantially limiting in one or more areas of life activities (e.g., living, learning, or working) lasting for at least six months (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017).

Schizophrenia – A neuropsychiatric disorder entailing abnormalities in two or more the following five domains during a significant portion of time during a one-month period: delusions, hallucinations, disorganized thinking (speech), grossly disorganized or abnormal motor behavior (including catatonia), and negative symptoms (*Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association [APA], 2013).

Stigma - According to the sociological research, stigma is defined as a discrediting attitude toward a given attribute that causes devaluation, marginalization, and dehumanization of an individual possessing the attribute (Goffman, 1963).

CHAPTER II

REVIEW OF THE LITERATURE

For over a century, schizophrenia has been characterized as the most devastating and debilitating disorder of mental illness (Bleuler, 1908; Guo et al., 2017; Kumar, Yadav, Parle, Dhingra, & Dhull, 2017; Lefort-Besnard et al., 2018; Lien et al., 2018; Mueser et al., 2018). Data from the World Health Organization ([WHO], 2017) indicated approximately 21 million people are currently living with schizophrenia worldwide. Approximately four to five percent of the U.S. adult population has a form of serious mental illness (SMI) (National Institute of Mental NIMH, 2017) and persons diagnosed with schizophrenia constitute approximately 0.3% of the U.S. adult population (National Alliance on Mental Illness [NAMI], 2017). Because schizophrenia is such a severely disabling condition, individuals, families, and mental health care professionals continue to struggle in their search for the most appropriate treatments to deal with schizophrenia and other forms of SMI (Guo et al., 2017; Hernandez et al., 2013; Falcum et al., 2017; Sivec & Montesano, 2012). Antipsychotic medications are widely used by medical professionals to treat schizophrenia; however, there are serious side effects associated with the use of such medications (Addington, Piskulic & Marshall, 2010; Monti et al., 2017). Medications are also limited as they cannot treat deep-rooted psychological issues and are primarily used to control hallucinations and delusions. Indeed, schizophrenia is a severely disabling condition that can render a person with hopelessness, despair, and

depression (Bucci & Tarrier, 2015), where individuals, families, and health care providers may only hope for the best in their search for appropriate treatments to deal with the condition (Hernandez et al., 2013; Sivec & Montesano, 2012).

In terms of psychological treatment, cognitive behavior therapy (CBT) is among the most common forms of psychotherapeutic interventions utilized to treat schizophrenia (Addington & Lecomte, 2012; Guo et al., 2017; Naeem et al., 2016); however, despite such interventions, stigma and discrimination toward PWS continue to present significant barriers to their recovery (Pingani et al., 2015; Smith & Cashwell, 2011; Yanos et al., 2015). Persons diagnosed with schizophrenia often experience stigma and discrimination in multiple forms, including the notion that they are inherently dangerous, harmful, or violent (Corrigan, 2016; Jensen, Vendsborg, Hjorthøj, & Nordentoft, 2017). Moreover, it is not only the general public but also mental health professionals who demonstrate resistance toward PWS (Avery et al., 2013; Hanafiah & Bortel, 2015; Linden & Kavanagh, 2011). The effects of this discriminatory behavior often leads to prejudices and biases which, in turn, can make the recovery process for PWS exceptionally difficult and challenging.

History of Schizophrenia

In Greek, the term schizophrenia means "splitting of mind" and the history of schizophrenia can be traced back to 1400 BC in the records of ancient Hindu Vedas (Aderibigbe, Theodoridis, & Vieweg, 1999; Hegarty, Baldessarini, Tohen, Waternaux, & Oepen, 1994; Kyziridis, 2005; Zilboorg & Henry, 1941). Since the early 19th century, schizophrenia has been referred to different pejorative names: demence precoce, paraphrenia hebetica, and hebephrenia (Aderibigbe et al., 1999). Kraepelin (1899) and Bleuler (1908), pioneers in the field of psychiatry, initially conceptualized schizophrenia (Aderibigbe et al.,; Falkai et al., 2015;

Kyziridis, 2005). Kraepelin defined schizophrenia as dementia praecox (premature dementia or precocious madness) wherein the brain of a PWS deteriorates progressively (i.e., dementia). Later, Bleuler replaced the term dementia praecox with schizophrenia after noting recovery in PWS, which was not the case in dementia praecox. In addition, Bleuler provided increased clarity regarding schizophrenia by categorizing primary features in the disorder in terms of four As: looseness of *associations, affective* flattening*, autism,* and *ambivalence*. Bleuler also conceptualized schizophrenia from a psychological perspective by emphasizing the role of psychological treatment in PWS and others (e.g., Katzenelbogen, 1942) found thoughts, emotions, and insight could be improved among PWS via psychotherapy.

Several decades ago, Gunderson et al. (1984) conducted an experimental study to review the effects of different forms of psychotherapy (i.e., exploratory, insight-oriented, reality-adaptive, and supportive psychotherapy) in the treatment of PWS. The researchers observed enhanced functional outcomes in cognition, ego-functioning, and interpersonal relationships over the course of a two-year post-treatment follow up. The researchers also observed reduced symptoms (both positive and negative) among PWS. For example, positive symptoms associated with schizophrenia are predominantly hallucinations and delusions. Negative symptoms are characterized by alogia or diminished speech and avolition or diminished motivation (Booij, Snippe, Jeronimus, Wichers, & Wigman, 2018; Kumar et al., 2017). In addition to treatment approaches (e.g., psychiatry and psychotherapy), Jeffries (1977) asserted opting a positive attitude toward PWS and viewing PWS as persons with a medical condition and not as "mad," could be beneficial to their recovery. In summary, the understanding of schizophrenia has evolved from demonic perceptions and "madness" to being viewed as a brain disorder (Falkai et al., 2015) which can be treated via psychotherapy and psychiatric interventions.

Diagnostic Criteria

The diagnostic criteria for schizophrenia have advanced with the multiple revisions of the *Diagnostic Statistical Manual for Mental Disorders* (i.e., [DSM], American Psychiatric Association [APA], APA, 1952; APA, 1968; APA, 1980; APA, 1987; APA, 1994; APA, 2013). For example, the DSM-5 (APA, 2013) provides the most accurate and a narrower diagnosis of schizophrenia compared to the first edition of the DSM (APA, 1952). The DSM-I categorized schizophrenia under psychotic disorders and defined schizophrenia in terms of a disorder of thoughts, behavior, and intellect. Mainly influenced by Bleuler's (1908) understanding of schizophrenia, the DSM-I provided a very broad definition of schizophrenia. For example, psychotic disorders were defined in terms of predominantly affective reactions, notably manic depressive, psychotic depressive, and schizophrenic reactions. Schizophrenic reactions were viewed as synonymous with dementia and included mood disorders, depression, dementia, and schizophrenia under one category. The DSM-III (APA, 1980) provided better conceptualization of schizophrenia than the DSM-I by adding symptoms (including delusions and hallucinations) to provide for increased clarity in the diagnosis of schizophrenia. The DSM-IV (APA, 1994) conceptualized schizophrenia under five categories (i.e., paranoid, disorganized, catatonic, undifferentiated, and residual). Additionally, the DSM-IV emphasized negative and positive symptoms associated with schizophrenia. That is hallucinations and delusions (positive symptoms) and alogia and avolition (negative symptoms). The DSM-5, introduced in 2013, included schizophrenia under *Schizophrenia Spectrum and other Psychotic Disorders* (to include Schizotypal Disorder, Delusional Disorder, and Schizoaffective Disorders. In terms of diagnosis, there is only one code assigned to schizophrenia (i.e., F20.9), except schizophrenia with catatonia (i.e., F06.1). In turn, manic depression and mood disorders were separated from

schizophrenia and require a different diagnostics label. In summary, all editions of the DSM attempted to increase the understanding of schizophrenia and other psychotic disorders which has aided mental health professionals in the provision of more clinically sound and consistent diagnosis of schizophrenia and related psychotic disorders.

Etiology of Schizophrenia

Persons diagnosed specifically with schizophrenia constitute about 1.1 % of the adult population (NIMH, 2017). There are several factors associated with the development of schizophrenia, ranging from genetic to environmental influences (Essali, 2017; Longden & Read, 2016; Misiak et al., 2017; Tsuang, Stone, & Faraone, 2014). Beginning in the 18th century, numerous hypotheses (e.g., genetic and environmental) were initiated to increase understanding surrounding the etiology of schizophrenia. For example, Carpenter (1986) highlighted the heterogeneity of schizophrenia, purporting the cause of schizophrenia depended on multiple factors. More recently, others (e.g., Essali, 2017; Grech & van Os, 2017; Longden & Read, 2016) have noted genetic factors alone cannot explain to the causality of schizophrenia as environmental influences have also been shown to impact the etiology of schizophrenia. Nonetheless, the precise cause of schizophrenia remains unknown (Henriksen, Nordgaard, & Jansson, 2017; Kumar et al., 2017). To date, the most commonly acknowledged hypotheses regarding the etiology of schizophrenia developed are the neurochemical (e.g., dopamine hypothesis), genetic, and environmental hypotheses.

Neurochemical Hypotheses

According to neurochemical hypotheses, individuals develop schizophrenia due to chemical imbalances in the brain (Coyle, Balu, Puhl, & Konopaske, 2016; Henriksen et al., 2017; Kumar et al., 2017). Research conducted in the last few decades indicates dopamine and

serotonin are the two most popular neurochemicals contributing to the cause of schizophrenia. A long line of research (e.g., Coyle et al., 2016; Madras, 2013; Seeman & Seeman, 2012) has supported the dopamine hypothesis as a plausible explanation for the cause of schizophrenia and assumes the hyperactivity of dopamine transmission leads to schizophrenia. Furthermore, the increased activity of dopamine transmission in the mesolimbic and mesocortical system in the brain have been associated with the positive and negative symptoms in PWS (Booij et al., 2018; Carlsson, 1988; Kumar et al., 2017). Similar to the dopamine hypothesis, researchers have posited serotonergic neurotransmitter dysfunction to be associated with the increased levels of serotonin in the brain which subsequently causes schizophrenia (Kumar et al., 2017; Yang & Tsai, 2017). However, recent research (e.g., Jauhar et al., 2017; Yang & Tsai) on neurochemical hypotheses (e.g., increased activity of dopamine and/or serotonin levels) have shown inconsistent findings and necessitate further exploration of other factors that may contribute to the etiology of schizophrenia.

Genetic Hypotheses

The genetic risk associated with the etiology of schizophrenia includes having first and second-degree biological relatives diagnosed with schizophrenia (APA, 2013). According to twin studies, the unaffected identical twin has approximately a 50% chances of developing schizophrenia (Castellani et al., 2017; Ripke et al., 2014). Moreover, the researchers (e.g., Selten, Ven, Rutton & Graee, 2013) reported genetic factors such as, a wide spectrum of risk alleles, pregnancy and birth complications, pregnancy- related stress infection, malnutrition, and maternal diabetes as potential cause of schizophrenia. In a population-based study, Nielsen, Meyer, and Mortensen (2016) deduced maternal infections and anemia are related to the risk of developing schizophrenia in children. In another study conducted regarding the dopamine

hypothesis, Howes, McCutcheon, Owen and Murray (2017) added the role of stress in disrupting dopamine function among PWS. The researchers noted increased levels of stress among individuals are associated with the incidence of psychosis. In sum, genetic factors have been shown to impact the etiology of schizophrenia among PWS.

Environmental Hypotheses

The DSM-5 (APA, 2013) lists several environmental factors related to the incidence of schizophrenia: season of birth, children growing up in urban environments, and some minority ethnic groups (e.g., African Americans and Asian Americans). Seltan et al. (2013) identified urban upbringing, migration, childhood trauma, and drug abuse as four major risk factors associated with schizophrenia. Similarly, Longden and Read (2016) noted environmental risks such as childhood abuse, war trauma, bullying, substance abuse, violence at work, dysfunctional parenting, poverty, and inequality to be associated with the development of schizophrenia. Maternal health has also been correlated with the etiology of schizophrenia and maternal depression and stress during pregnancy are considered plausible causes of schizophrenia (Steullet et al., 2017). Emerging research has further suggested substance abuse increases the risk of schizophrenia, particularly among adolescents (Evins, Green, Kane & Murray, 2013; Hartz et al., 2017).

Recent studies (e.g., European Network of National Networks Studying Gene-Environmental Interactions in Schizophrenia [EU-GEI], 2014; Hida et al., 2013; Howes et al., 2017; Mandelli, Toscano, Porcelli, Fabbri, & Serretti, 2016) regarding environmental and genetic factors have pointed to the impact of genetic and environmental interections (G × E/Genetic × Environmental) in the development of schizophrenia. For example, interactions between genetic factors such as viral and maternal infections in combination with environmental factors such as

substance abuse, increase the incidence of developing schizophrenia (Hida et al., 2013). Another study (Howes et al., 2017) looked at G × E interactions and found different phenotypes (i.e., traits/features) in PWS as compared to individuals without schizophrenia as a result of adverse genetic and environmental interactions (European Network of National Networks Studying Gene-Environmental Interactions in Schizophrenia, 2014). Indeed, the incidence of schizophrenia is strongly related to genetic-environmental interactions, with a subsequent need for appropriate treatment that focuses on genetic and environmental intersections.

In sum, genetic and environmental influences, combined with the neurochemical influences of dopamine and serotonin, are the most commonly known factors associated with the etiology of schizophrenia and related psychotic disorders; however, research surrounding the etiology of schizophrenia remains somewhat elusive. It is this lack of solid evidence surrounding the etiology of schizophrenia and related disorders which continues to negatively impact the clinical ability to adequately understand and subsequently treat psychotic disorders.

Schizophrenia Treatment

The treatment of schizophrenia has evolved considerably over the years. In the early 1900s, PWS were subjected to harsh treatments such as pyrotherapy (also known as fever therapy), which involved inducing fever in PWS (Hegarty et al., 1994; Menzies, 1935). Sulphur injections, gas therapy, and prefrontal leucotomy, among other forms of treatment, were also used to treat PWS (Hegarty, et al., 1994; Lehmann & Ban, 1997). Electroconvulsive therapy (ECT) is known as an effective medical approach to treat drug-resistant forms of schizophrenia (Kaster, Zafins, Daskalakis, & Blumberger, 2017; Thomann et al., 2017) and has shown positive results among PWS during acute psychotic episodes (Thomann et al., 2017). However, ECT is associated with several side-effects, including, amnesia, excessive fatigue, and increased relapse

rates among PWS (Mitra & Thirthalli, 2018; Shibasaki, Takebayashi, Fujita, & Yamawaki, 2015; Zheng et al., 2017). In addition to ECT, medical professionals utilize pharmacological approaches as a first-line of treatment for PWS (Monti et al., 2017).

Pharmacological Treatment

In the 20th century, pharmacological treatment (e.g., antipsychotic drugs) became a primary modality to treat schizophrenia, notably the positive symptoms associated with schizophrenia such as delusions and hallucinations (Carpenter, 1986; Kane, 1987). Two types (conventional and new-generation) of medications are commonly used to treat positive and negative symptoms of schizophrenia. During 1990s, typical/conventional medications (e.g., chlorpromazine, perphenazine, and haloperidol) were commonly used by psychiatrists to treat schizophrenia (Keefe, Silva, Perkins, & Liberman, 1999). New-generation/atypical medications (e.g., clozapine, olanzapine, and risperidone) replaced the conventional medications used to treat both positive and negative symptoms of schizophrenia due to severe side effects of the conventional medications such as tardive dyskinesia, the most common and severe side-effect. However, recent research (e.g., Bas et al., 2017) continues to show the atypical medications also cause significant side effects, including fatigue, weight again, agitation, tremors, restlessness, dizziness, and nausea. As a result of these side effects, PWS often choose to forgo taking their medications.

Alternatives to pharmaceutical treatment such as psychotherapy started to gain popularity toward the end of 20th century (Carpenter, 1986). Additionally, researchers highlighted the significance of managing negative symptoms, such as alogia (e.g., poverty of speech) and anhedonia (e.g., inability to derive pleasure). Moreover, with the evolution of the DSM-III, IV, and 5, the etiology of schizophrenia started to be viewed from both genetic (e.g., maternal

infections or viral infections) and environmental (e.g., childhood trauma and substance abuse) perspectives leading to the need of psychotherapy for PWS. However, despite psychotherapeutic treatment modalities, pharmacological treatment continues to be the first-line of treatment for PWS because of several reasons, including a speedy recovery, convenient to use, reduced hospitalization rates, cost-effectiveness, relapse prevention, and effective in reducing positive symptoms (e.g., hallucinations and delusions) associated with schizophrenia (Barnes, 2011; Bas et al., 2017; Lieberman et al., 2005; Monti et al., 2017). In essence, the role of antipsychotic drugs in enhancing the functionality of the lives among PWS is noteworthy.

Psychotherapeutic Treatment

While antipsychotic medications can produce efficacious results in the treatment of schizophrenia, persons taking such medications are often left with residual symptoms and are susceptible to relapse. For example, researchers (e.g., Seeman & Seeman, 2012; Wykes et al., 2017) found persons who used antipsychotic medications were prone to suicide, substance use, reduced mental functioning, and reduced life satisfaction. In addition to aforementioned side-effects, the use of antipsychotic medications has been linked with disruption of the cognitive functions among PWS. For example, antipsychotic drugs impair functioning of the extrapyramidal system, thus causing symptoms such as *tremor* (Sykes et al., 2017). In another study, the impact of antipsychotic drugs, notably clozapine, has been linked with a severe medical condition called *blood dyscarsia* (or a blood disorder) (Giradin et al., 2018). The severe and debilitating side effects of antipsychotic medications necessitate the incorporation of other psychotherapeutic interventions into the treatment of PWS (Bustillo, Lauriello, Horan, & Keith, 2014). Research has supported the combination of antipsychotic medications and psychotherapy as an effective form of treatment for schizophrenia (Gaudiano et al., 2017; Addington &

Lecomte, 2012). Among all the approaches (e.g., psychodynamic, CBT, cognitive enhancement therapy, and family therapy), CBT and psychodynamic methods are two of the most common forms of psychotherapy for working with PWS because they assist individuals in coping effectively with the symptoms associated in schizophrenia (Guo et al., 2017; Kukla, Bell, & Lysaker, 2018).

Psychodynamic Approach

According to Freud (1922), schizophrenia was considered untreatable. One of the primary reasons for Freud's assumption was the lack of transference in PWS, which purportedly inhibits the psychotherapeutic process. Freud assumed the lack of insight exhibited by PWS would make the communication between a psychiatrist and patients with schizophrenia unimaginable. Furthermore, for a long time, psychiatrists were the only professionals available to treat schizophrenia and antipsychotic drugs were the only solution for individuals with this condition (Bas et al., 2017; Fowler & Celenza, 2008; Monti et al., 2017). As a result, many critics of psychoanalysis questioned the effectiveness of a psychoanalytic therapy to treat schizophrenia. However, neo-Freudians (e.g., Fromm-Reichmann, 1948; Jung, 1914; Sullivan, 1927) questioned Freud's approach due to Freud's extreme emphasis on psycho- sexual stages. For example, Sullivan (1927) focused on an interpersonal approach by working on inner psychotic experiences of PWS. Fromm-Reichmann (1948) suggested professionals establish a strong relationship with the client by working on the material the client brings into the session. Fromm-Reichmann further suggested assisting clients in overcoming isolation, aloofness, and the social rejection associated with schizophrenia. Recently, researchers (e.g., Flower & Celenza, 2008; Lehmann et al., 2015; Roth et al., 2012) noticed remarkable results among PWS by focusing on client insights, unconscious material, and defense mechanisms. A study conducted

by Roth et al. (2012) emphasized hallucinations and delusions need to be understood psychodynamically through the unconscious material the person with schizophrenia presents in the therapy. For example, other studies (e.g., Flower & Celenza, 2008; Lehmann et al., 2015) have shown psychodynamic therapy is an effective treatment for PWS since psychodynamic therapy works on insight development. Insight can be tapped through a psychodynamic approach by bringing unconscious material to conscious level. That is, the therapist tries to increase insight by exploring a client's subjective experiences. This approach is known to help clients reach into their deeply-rooted emotional experiences to facilitate long-term therapeutic change and personal growth (Lehmann et al., 2015). Therefore, through a psychodynamic approach, unconscious material can be used for insight development in PWS. Moreover, research has shown hallucinations and delusions can be understood through exploration of the unconscious material individuals present in therapy (Lehmann).

In addition to insight development, an area considered crucial for the treatment of schizophrenia is the examination of psychotic defenses. As noted by Sharma and Sinha (2010), defenses play a significant role in human beings as they are related to an individual's self-esteem, anxiety, and interpersonal relationships. Berney et al. (2014) noted psychotic defenses are important to consider during interventions among PWS as these defenses are associated with functioning; however, psychotic defense needs are not included in one of the most validated schizophrenia screening instruments, the *Defense Mechanisms Rating Scales* ([DMRS], Perry, 1990). Berney and colleagues have developed another scale to assess functioning related to defenses in PWS. The scale, the *Six Psychotic-Defenses Mechanisms Rating Scales* ([6 P-DMRS], Berney et al., 2011), assesses six psychotic defenses among individuals with psychosis. The six psychotic defenses are: *psychotic denial*, *autistic withdrawal*, *distortion, delusional*

projection, *fragmentation,* and *concretization*. All of these psychotic defenses serve different functions. For example, psychotic denial means individuals are in denial of reality and distortion defense means individuals alter the reality. Therefore, it is important to evaluate a particular defense as it relates to the function of that defense. Berney et al. examined both scales (DMRS and 6 P-DMRS) and found better evaluation of defense functioning among PWS can be produced when both scales are combined. For example, in addition to psychotic defenses that can be examined using the 6 P-DMRS, the DMRS will also assess other defenses such as repression, regression, and projection. The researchers emphasized when defenses are adequately addressed in the therapy, PWS will improve in their ability to relate with the reality of real world situations. Moreover, changes in defense functioning (from unhealthy to healthy ones) will likely help individuals to develop coping skills in challenging situations. Bareny et al. (2014) also asserted improvements in defense functioning among PWS. For example, the researchers found increased levels of insight among PWS, which aided in their ability to make connections with reality. As such, psychodynamic therapy produces promising results in the area of social and cognitive functioning and may be especially beneficial among PWS who prefer to avoid taking antipsychotic medications.

Cognitive Behavior Therapy

For decades, researchers have touted CBT as the most effective psychotherapeutic approach to treat schizophrenia (Addington & Lecomte, 2012; Guo et al., 2017; Naeem et al., 2016; Velthorst et al., 2015; Wykes et al., 2007). Several studies have shown CBT has been used as a readily available form of psychological treatment among PWS in the United Kingdom for years. In the U.S., CBT has also gained significance as a state-of-the art counseling approach for treating schizophrenia (Davis et al., 2017; Gaudiano et al., 2017; Maura, & de Mamani, 2017;

Owen, Speight, Sarsam, & Sellwood, 2015). Notably, CBT is the most accepted and efficacious form of psychotherapeutic treatment available for PWS and other psychotic disorders (Guo et al., 2017; Kukla et al., 2018).

There is a large body of psychotherapeutic research supporting CBT as an effective treatment for addressing the positive symptoms of schizophrenia (Lecomte, 2015; Shonin, Van Gordon, & Griffiths, 2014; Van-Oosterhout et al., 2016; White & Luther, 2017). For example, Kay, Kendall, and Dark (2017) noted reduction in auditory hallucinations among participants with psychosis after receiving cognitive behavior therapy for psychosis (CBTp). Similarly, Thomson, Wilson, Collerton, Freeston, and Dudley (2017) noticed improvements among individuals who were experiencing visual hallucinations after receiving CBT. In addition to reducing positive symptoms, treatment of the negative symptoms (e.g., alogia, anhedonia, and avolition) associated with schizophrenia is important as these symptoms are directly linked to the functional ability of PWS (Aleman et al., 2016; Fowler et al., 2018; Remington et al., 2016; Steel et al., 2017; Lecomte, 2015). Moreover, psychotropic medications, in addition to their many negative side effects, have limited or no effects on treating negative symptoms such as anxiety, cognitive impairments, and depressive symptoms that frequently co-occur with schizophrenia (Tek et al., 2016; Velligan, Sajatovic, Hatch, Kramata, & Docherty, 2017; Wykes et al., 2017). Elis et al. (2013) conducted a meta-analysis to compare the effectiveness of three psychosocial approaches (CBT, social skills training [SST]), and combined (CBT and SST) to treat the negative symptoms associated with schizophrenia. Specifically, the authors compared 21 studies to evaluate the effectiveness of CBT and SST and found CBT was an effective approach for treating the negative symptoms associated with schizophrenia. That is, Elis et al. found while five studies showed SST was an effective treatment for reducing negative symptoms associated

with schizophrenia, 16 studies showed CBT was the more efficacious treatment in reducing negative symptoms compared to SST.

Freeman et al. (2015) designed an intervention (brief CBT) to assist individuals with paranoid thoughts to feel less stressed and anxious when they were outside near busy streets. Fifteen patients with persecutory delusions who resided in urban areas participated in the study. The intervention consisted of a therapy called "Getting Out and About" whereby patients were exposed to anxiety and stress-provoking situations. The physiological effect of anxiety and stress (e.g., increased heart rate and worry) was also examined during the intervention. The researchers also provided different technological strategies through the use of computers, including letting go of suspicious thoughts by adopting a mindfulness approach to fearful thoughts and thinking positively through self-talk. For example, all participants reported they experienced anxiety, stress, and increased paranoid thoughts when they went outside; however, after receiving the brief CBT intervention, participants reported less anxiety, stress, and paranoid thoughts. Following the treatment, participants also reported high levels of confidence when going outside into busy streets. The outcome of the study demonstrated the efficacy of a CBT intervention designed to reduce comorbid symptoms of schizophrenia, including anxiety and stress associated with the paranoid thoughts that frequently seen in schizophrenia.

PWS often experience difficulty regulating their emotions (Khoury & Lecomte, 2012) and recent studies designed to examine CBT and positive psychology have emphasized the importance of emotional regulation in PWS (Langer et al., 2017; Yang & Mak, 2017). For example, researchers Khoury and Lecomte (2012) and Yang and Mak, (2017) suggested the use of CBT-based interventions such as acceptance, detachment, and mindfulness approaches to regulate emotions. Yang and Mak also noted reduced levels of self-stigma and enhanced well-

being among PWS after receiving self-compassion and mindfulness-based therapy. Therefore, the application of CBT-based interventions such as mindfulness, detachment, and acceptance have been shown to help PWS regulate their emotions and enhance their functioning and overall quality of life.

Cognitive Enhancement Therapy (CET)

Cognitive problems such as ruminating thoughts, making up new words (neologisms), and incoherence or stringing unrelated words together (word salad) are common among PWS. Researchers (e.g., Buonocore et al., 2017; Eack, Newhill, & Keshavan, 2016; Hogarty et al., 2004: Keshavan, Eack, Prasad, Haller, & Cho, 2017) have subsequently touted the efficacy of CET (also known as cognitive remediation) among PWS. CET consists of utilizing computer-assisted training to enhance neurocognition via social-cognitive exercises and coping strategies (Buonocore et al., 2017; Hogarty et al., 2004). As a result, PWS have experienced increased levels of cognitive functions. Research conducted by Eack, Newhill, and Keshavan (2016) further supports CET as an effective treatment for PWS, as improved cognitive and social functioning were observed during the early phases of schizophrenia when used among adults with PWS. Therefore, CET is another promising therapeutic approach for persons with PWS. However, despite myriad treatment approaches, many PWS continue to struggle due to poor quality of life, reduced socialization, homelessness, isolation, and reduced employment opportunities. Furthermore, schizophrenia remains one of the most negatively stigmatized mental illnesses in the U.S. and other developed countries (Degnan et al., 2017, Hartz et al., 2017; Koike et al., 2017; Naeem et al., 2016, & Vargas-Huicochea et al., 2017).

Stigma toward Mental Illness

For decades, negative attitudes toward persons with mental illness have been reported (Angermeyer & Matschinger, 2003; Balon et al., 2017; Corrigan, 2016; Corrigan & Watson, 2002; Rabkin, 1974; Simmons, Jones, & Bradley, 2017). Stigma, which is a negative attitude, was originally defined by Goffman (1963) as a discrediting attitude toward a given attribute that causes devaluation, marginalization, and dehumanization of an individual possessing the attribute. Goffman further conceptualized stigma from three perspectives (1) body related (e.g., physical illness), (2) character related (e.g., mental illness), and (3) tribal stigma (e.g., based on race, religion, and nation). Goffman further purported persons with mental illness are perceived as having a weak will and are not capable of living independently. Stigmatization of persons with mental illness was documented in the middle ages when mental illness were considered as being "divine" having endowed magical power or demons that were to be feared (Bynum, Porter, & Shepherd, 2004; Shorter & Marshall, 1997). Asylums used to be the primary institutions to treat persons with mental illness and individuals committed to the asylums were given harsh treatments that included: drilling holes in their brain, frontal lobotomies, excessive electric shock therapy, and heavy sedative dosages (Shorter & Marshall, 1997). Psychiatrists ultimately intervened and provided hope; however, it took decades to design effective treatments specifically for persons with severe mental illness ([SMI], Kendell, 2001; Shorter & Marshall, 1997). Currently with the rise of mental health services that include mental health awareness and psychological treatment, stigma toward individuals experiencing mental illness is changing (Ahuja, Dhillon, Juneja, & Sharma, 2017; Rüsch, & Xu, 2017). Nevertheless, several researchers (Batastini, Bolanos, Morgan, & Mitchell, 2017; Iheanacho, Stefanvoics, Ezeanolue,

& Rosenheck, 2016, Letovancova, Kovalcikova, & Dobrikova, 2017) have asserted attitudes toward persons with SMI are still negative and pervasive and need to be diminished.

Letovancova et al. (2017) surveyed 1,624 community-dwelling adults to measure attitude toward persons with SMI. The researchers found gender, socio-economic status (SES), and education affected public attitudes toward persons with SMI. For example, the researchers found women tended to perceive persons with SMI less dangerous compared to men. Moreover, persons from lower SES endorsed higher stigmatizing attitudes toward persons with SMI compared to people from higher SES backgrounds. The researchers also noted education improved attitudes of participants toward individuals with SMI. The Letovancova et al. research also established an inverse relationship between education and stigma toward SMI (i.e., increased education and reduced stigma), underscoring the need for additional research on stigma, education, and SMI.

Gonzales, Chan, and Yanos (2017) surveyed 806 individuals from the New York state to measure factors of stigma toward SMI. The researchers investigated the correlation between demographics (e.g., gender, race/ethnicity, political affiliation, and education) and neighborhood characteristics (e.g., individuals residing in low, median or higher income areas). Gonzales et al. hypothesized individuals residing in neighborhoods with low income would exhibit more stigmatizing attitudes toward persons with SMI as opposed to individuals residing in higher income neighborhood areas. The researchers found neighborhood location affects individual attitudes toward SMI. For example, individuals living in economically disadvantaged areas with non-liberal political affiliations and less education imposed more stigma toward persons with SMI compared to individuals with liberal political affiliations from higher income neighborhoods. The researchers suggested designing interventions to reduce mental illness

stigma specifically for lower income neighborhood areas. The researchers also suggested adding a social desirability scale for future researchers who conducting survey studies regarding attitudes toward persons with SMI to ascertain if participants' responses represent their true beliefs or if they feel compelled to answer in a manner in which they believe society would expect them to respond.

Stigma has also been studied among employers toward applicants with SMI (Batastini et al., 2017; Larkings, Brown, & Scholz, 2017). Batastini et al. (2017) conducted a quantitative study among 249 individuals to measure employers' stigma toward job applicants with psychiatric and criminal backgrounds. The researchers found employers in hiring positions perceived candidates with SMI with criminal background with more stigma compared to candidates without an SMI and criminal background. The researchers further asserted employers were more accepting of candidates without SMI. Additionally, the researchers found employers' attitudes improved after they engaged in a brief training on mental illness and resulted in reducing stigma toward persons with SMI. Such research highlights the impact of negative attitude among employers toward SMI, which could potentially affect hiring rates among persons diagnosed with SMI. Moreover, there is a need to provide SMI training among employers in order to mitigate stigma.

Other researchers (e.g., Chan & Mak, 2017; Larkings et al., 2017; Zhang, Mak, & Chan, 2017) have reported self-stigma among individuals with SMI as a result of ongoing and negative public attitudes. For example, Larkings et al. conducted a qualitative study among 23 consumers to explore beliefs attached to mental illness admitted by consumers about their own mental illness and public beliefs about causes of mental illness. Essentially, the investigators aimed to explore factors that impact public stigma and self-stigma pertaining to mental illness. The

sample included individuals with several types of mental illnesses, including depression, schizophrenia, and borderline personality disorder. The researchers revealed several interesting findings. First, all participants believed mental illness was predominantly caused by environmental factors (as opposed to biological factors). For example, the majority of the consumers (96%) viewed their own mental illness as a result of environmental factors. Second, the majority of consumers (65%) believed public perception of SMI is negative as the public blames persons with SMI for their illness. Larkings et al. concluded consumers expected more acceptance from the public toward their mental illness in that consumers hoped to be viewed as individuals with a medical condition instead of being blamed them for their mental illness.

In another study designed to explore self-stigma, Zhang et al. (2017) purported public stigma causes self-stigma among individuals with SMI resulting in reduced levels of self-empowerment (e.g., lower levels of self-efficacy). The researchers also concluded self-stigma hindered recovery among individuals with SMI and suggested the need to reduce public perceptions of mental illness through education and awareness. Consequently, stigma toward SMI can and should be mitigated to increase empowerment and to boost mental health recovery among individuals with SMI.

Stigma toward Schizophrenia

Attitudes consist of ways individuals feel, think, behave, and or act toward themselves or others, situations, or objects (Webster, 2018). An attitude, from a psychological viewpoint, occurs in conjugation with the *belief* attached to a particular individual or object (Fischbein & Ajzen, 1972). For example, people form beliefs about certain groups of individuals who also influence their attitudes toward groups of individuals. Similarly, research conducted on attitudes in respect to persons with disabilities highlights the role of socio-cultural factors in determining

individuals' attitudes toward disabilities (Antonak & Livneh, 2000). As such, attitudes' functioning is contingent upon individuals' surroundings. Furthermore, attitudes from a negative connotation, can be referred as a prejudice (Devine, 1989) and/or stigma (Goffman, 1963).

Stigma, from a psychosocial perspective, refers to attitudes and beliefs that lead to people reject, avoid, or fear those they perceive as being different. Stigma toward schizophrenia is higher compared to stigma toward other mental illnesses, such as depression (Jensen et al., 2017; Koike et al., 2017) and bipolar disorder (Vargas-Huicochea et al., 2017). For example, Vargas-Huicochea et al. (2017) conducted a non-experimental cross-sectional study to examine the relationship between perception of aggressive-dangerousness, disorder identification, treatment, and attitudes toward schizophrenia and bipolar disorder among medical students in Mexico. A total of 98 individuals from first and second year medicine participated in the study. The majority of the participants reported they considered schizophrenia to be more severe than bipolar disorder. Stigma toward schizophrenia disorder was higher compared to stigma toward bipolar disorder. The researchers also concluded the majority of the participants (24%) believed PWS were more verbally aggressive in comparison to persons with bipolar disorder (16%). Additionally, participants believed PWS display more self-aggression (51%) compared to persons with bipolar disorder (4%). Findings also showed participants perceived PWS as more aggressive (27%) toward others compared to persons with a bipolar disorder (11.5%). Vargas-Huicochea et al. recommended further investigation of the impact of stigma on the quality of life of PWS and strongly recommended including up-to-date information regarding mental illness at the onset of students' medical training. As illustrated by Vargas-Huicochea et al., professionals-in-training are not above engaging in stigma toward PWS and other forms of SMI and should

receive education to reduce negative and erroneous perceptions at the commencement of their training.

Public Attitudes

Public attitudes toward PWS have been studied in several ways (Kavanagh & Banyard, 2013; Koike et al., 2017; Thibodeau, 2016; Yamaguchi et al., 2017). Thibodeau (2016) examined beliefs toward PWS among 308 individuals who participated in an online survey in two ways (1) continuum view (e.g., persons without schizophrenia occasionally experience similar symptoms as PWS such as hallucinations and (2) categorical view (e.g., persons without schizophrenia are different from PWS). Thibodeau found a relationship between two variables (1) dependent variable (i.e., continuum view) and (2) independent variables (i.e., social distance, fear, and anger). For example, participants' social distance, anger, and fear levels were higher due to their believe in a continuum view as opposed to people who hold a categorical view toward PWS. Thibodeau emphasized the need for promoting anti-stigma programs grounded on a continuum belief model with the purpose of lessening perceived social distance, fear, and anger toward PWS.

Kavanagh and Banyard (2013) conducted a cross-sectional study to examine public attitude toward PWS. The researchers utilized an alternative term for schizophrenia (i.e., integration disorder) to measure the difference in attitudes among the general public toward schizophrenia vs. integration disorder. A total of 140 individuals participated in the study. The researchers found participants indicated higher levels of stigma toward the term schizophrenia compared to the term integration disorder. As seen in this study, there is a more negative connotation attached to the term schizophrenia than to a disorder that can be equally debilitating.

Koike et al. (2017) conducted a similar study to the Kavanagh and Banyard (2013) study to examine whether a name change for schizophrenia would show reduced stigma toward PWS over the years. The researchers aimed to explore knowledge and stereotypes toward different types of medical conditions: schizophrenia (old term/mind-split disorder, and new term/integration disorder), depression, and diabetes mellitus. The researchers randomly selected 259 graduate students from 20 universities in Tokyo. The researchers examined stigma toward two terms used for schizophrenia in Japan (1) the old term which means "*Seishin-Bunretsu-Byo*" or a mind-split-disorder and (2) the new term which means "*Togo-Shitcho-Sho*" or an integration disorder (Sato, 2006). The survey results indicated participants reported more knowledge and less stigma toward the new name of schizophrenia (integration disorder) compared to the old name (mind-split). However, the researchers found participants indicated less knowledge and more stigma toward schizophrenia compared to other medical conditions. More recently, Yamaguchi et al. (2017) conducted a meta-analytic review to investigate the relationship between renaming schizophrenia and stigma toward PWS (i.e., old term/mind-split disorder and new term/integration disorder). The researchers reviewed approximately 25 research studies conducted in the past 12 years (2004-2016) and found in countries like Japan, lower levels of stigma were displayed among the public toward PWS after renaming the word schizophrenia. Yamaguchi et al. suggested future studies be conducted with different populations to investigate the impact of stigma on a new term for schizophrenia across nations.

Family Attitudes

To expound on their previous study and include familial attitudes, Koike et al. (2017) conducted a study to compare levels of stigma and social distance among Japanese children and their parents toward the renaming of the word schizophrenia. A total of 143 parent-child dyads

participated in the study. The researchers aimed to compare stigma and social distance toward three mental and physical illnesses: schizophrenia (mind-split disorder and integration disorder), depression, and diabetes mellitus (physical illness). Significant results were revealed in terms of stigma and social distance toward the three illnesses. Parents reported lower levels of stigma toward mental illness compared to their children; however, parents reported higher levels of stigma and a greater need for social distance toward schizophrenia compared to their children. The results also revealed the majority of the parents were able to recognize both terms for schizophrenia as the same compared to their children. Also, parents who considered the old and new term for schizophrenia as the same endorsed higher levels of stigma compared to parents who did not recognize mind-split disorder as the same to the integration disorder. The researchers recommended parents participate in psychoeducation regarding renaming schizophrenia in order to mitigate stigma and social distance and to be able to pass on information regarding schizophrenia to their children.

Krupchanka et al. (2016) conducted a qualitative study among 20 family members of PWS to explore the experience of stigma among these families toward PWS. The researchers found approximately 50% of participants reported shame and guilt associated with the diagnosis of schizophrenia in their family. Family members also indicated a lack of support from their extended family members and the health care system with regard to care of PWS. The researchers also investigated coping strategies among family members to mitigate stigma associated with the schizophrenia disorder. Families reported experiencing avoidance from other family members in regard to the stigma attached to the schizophrenia. The researchers recommended facilitating support and assistance from the mental health system to enhance the quality of life among families and their loved ones with schizophrenia. Krupchanka et al. also

highlighted the role of the mental health care system in educating and empowering family members regarding schizophrenia in order to lessen stigma toward PWS.

Professional's Attitudes

Negative attitudes toward PWS have generally been reported among the public. However, diagnosis-related stigma has been reported in the families of PWS (Krupchanka et al., 2016) as well as among professionals (Magliano et al., 2017; Ozer, Varlik, Ceri, Ince, & Delice, 2017; Nordt, Rossler, & Lauber, 2006). For example, Magliano et al. (2017) investigated general practitioners' beliefs regarding the treatment of the PWS in a medical hospital. The researchers aimed to explore whether general practitioners believed in providing different treatment to patients with schizophrenia as opposed to patients without schizophrenia. The researchers surveyed 322 medical doctors by randomly assigning them a questionnaire on beliefs about PWS. Magliano et al. found approximately 68% of medical doctors *somewhat* believed other people feel frightened by PWS. More than 30% of participants reported PWS create discomfort among other patients in a non-psychiatric hospital setting. Additionally, 19% of the physicians believed PWS should be separated from persons without schizophrenia in a non-psychiatric hospital setting. The researchers found perceived dangerousness toward PWS was associated with medical doctors' beliefs regarding medications. For example, 42% of the participants reported PWS should take psychiatric drugs for a lifetime. Accordingly, the researchers strongly recommended psychoeducation for medical practitioners to enhance their knowledge and to reduce stigma about schizophrenia in order to provide better care for PWS.

Stigma toward PWS among mental health professionals is not new (Nordt et al., 2006). Nordt et al. conducted a study among two groups (1) mental health professionals (n = 1073) and (2) public (n= 1737) to compare the difference in stigma levels toward PWS. Nordt et al.

showed noteworthy results in terms of stereotypes and social distance endorsed by participants toward PWS. For example, psychiatrists endorsed more stereotypes toward PWS compared to other mental health professionals (e.g., psychologists, nurses, and other therapists) as well as the general public. Mittal et al. (2014) conducted a cross-sectional study to examine stigma among mental health providers (psychiatrists, psychologists, and nurses) and among primary care providers (physicians and nurses) regarding PWS. Approximately 400 health care providers participated in the study. The researchers found primary care providers reported higher levels of social distance toward PWS compared to mental health providers. Moreover, higher levels of stigma were also reported among primary care providers compared to mental health providers. The present study has shown less stigma toward PWS among psychiatrists, which is inconsistent with the Nordt et al. 2006 study where psychiatrists held more negative attitudes toward PWS. As such, studies on the negative attitudes endorsed by psychiatrists toward PWS have shown inconsistent findings, necessitating further examination if we want to better understand the how to reduce stigma among the professionals who provide much (if not the majority) of the care among PWS.

Ozer et al (2017) conducted a study on stigmatizing attitudes toward mental illnesses among mental health professionals (e.g., psychiatrists, pediatrics, nurses, and paramedics). In addition to evaluating stigma, the researchers investigated the use of stigmatizing language among mental health professionals toward persons with PWS. The researchers found psychiatrists reported lower levels of stigma compared to other mental health professionals toward persons with PWS, which is consistent with the Mittal et al. (2014) study. However, in regard to stigmatizing language, Ozer et al. found nearly all mental health professionals reported using more stigmatizing language toward PWS compared to other persons with mental illnesses

such as bipolar disorder. For example, participants reported using the word "schizophrenics" for PWS and "insane" for persons with intellectual impairment. Interestingly, the present study reflected similar results to the Magliano et al. (2017) study in regard to perceptions attached to the diagnosis of schizophrenia. The researchers strongly recommended psychiatrists use less stigmatizing language and embrace positive attitudes toward persons with PWS. Indeed, if the highest credentialed professionals use pejorative language toward PWS, it goes without saying other professionals are likely to follow suit.

Stigma toward persons with PWS has been studied among other mental health providers, including social workers. For example, Jensen et al. (2017) investigated the attitudes of social services employees toward PWS and individuals with depression. A total of 363 participants were given an electronic questionnaire and the researchers randomly assigned participants into two groups. The first group received a vignette about a person with schizophrenia and the second group received a vignette about a person with depression. To summarize, the researchers reported (a) 78% of participants viewed PWS to be more dangerous and violent compared to persons with depression, (b) the majority of the participants (68%) desired more social distance from PWS as opposed to persons with depression, and (c) in general, participants endorsed more negative attitudes toward PWS than toward persons with depression. The findings also revealed higher stigma (96%) toward the schizophrenia vignette compared to the depression vignette (4%). The researchers recommended future research be designed to investigate the association between professionals' stigma levels (negative/positive) and their professional care (worse/better) toward PWS. Additionally, the researchers recommend anti-stigma trainings for professionals to mitigate negative attitude toward PWS. As seen with the Jensen et al. study as

well as other studies regarding stigma toward PWS, stigma is a problem among professionals across all health disciplines.

Race/Ethnicity, Stigma and Schizophrenia

Research has well-documented people's cultural values and beliefs about mental illness have a strong impact on the levels of stigma directed toward PWS (Koike et al., 2017; Koschorke et al., 2017; Weisman, 1997). More specifically, a growing body of research has established a relationship between stigma and race/ethnicity toward persons with SMI such as schizophrenia (Dueweke & Bridges, 2017; Koike et al., 2017; Koschorke et al., 2017; Magliano et al., 2017; O'Keeffe et al., 2016; Phalen, Warman, Martin, & Lysaker, 2016; Weisman, 2005; Yamaguchi et al., 2017). In recent years, researchers have investigated stigma toward PWS globally, including China (Lee et al., 2016), Turkey (Yalvaç et al., 2016), Ireland (O'Keeffe et al., 2016), Belarus (Krupchanka et al. 2016), Japan (Asami & Toshinori, 2016; Yamaguchi et al., 2017), India (Koschorke et al., 2017; Singh, Mattoo, Grover, 2016), Nepal (Neupane, Dhakal, Thapa, Bhandari, & Mishra, 2016), El Salvador (Valdivieso-Mora, 2017), and Mexico (Villalobos et al., 2017). The differences in perceptions of mental illness among persons from varying cultural backgrounds are intriguing. For example, research has shown people in Japan perceive PWS as being more dangerous than people in China (Yamaguchi et al., 2017). People in Asian and African countries view mental illness to be a result of sin or punishment from God (Vang, Cuevas, Sharma, & Rueda, 2018). In Europe, people with SMI are perceived as unpredictable or dangerous (Athanasopoulou et al., 2017). The researchers established the association of stigma with several contributing factors, including race/ethnicity (Dueweke & Bridges, 2017; Koike et al., 2017; Koschorke et al., 2017), country of residence (Weisman, 1997; Koike et al., 2017), prognosis outcome (Dassori, Miller, & Saldana, 1995; Weisman, 1997), and help-seeking

behavior (Mantovani, Pizzolati, & Edge, 2016). Indeed, the need to study the impact of stigma toward PWS from a cultural perspective is evident.

Cultural Attitudes

Researchers (e.g., Koschorke et al., 2017 & Neupane et al., 2016) have established associations between stigma and economic status in developing countries such as India and Nepal. Their findings suggest there are higher levels of stigma toward mental illness among family members with low SES. For example, Koschorke et al. examined stigma and discrimination among family members of PWS in India and noted higher levels of stigma among family members of PWS due to financial hardship (e.g., low SES and high cost of mental health services). The researchers conducted a mixed methods study among 318 family members of PWS. The primary results revealed (1) approximately 40% of the participants reported neighbors would treat their family member with schizophrenia differently, (2) 30% of participants associated shame and embarrassment with schizophrenia, and (3) 30% of the participants indicated a need to hide the illness regarding their family members with schizophrenia from other people. Altogether, the researchers found higher levels of stigma among family members with low income compared to family members with high income. These studies indicate negative attitudes toward PWS could be more prevalent among lower SES as compared to families of higher SES.

Neupane et al. (2016) conducted a similar study to measure perceived stigma among family members toward persons with mental illness in Nepal. The researchers found a correlation between family levels of stigma with sex, occupational status, and education level. For example, the researchers noted a significant difference between participants' level of education and stigma level. That is, participants with no education scored higher on a stigma scale compared to participants with higher education. In addition, participants employed in the

agricultural industry showed higher levels of stigma toward a family member with mental illness compared to participants working in a business industry. The researchers recommended providing family interventions to families with low education and low economic status to mitigate stigma toward mental illness such as schizophrenia.

Upon examining cultural impacts on stigma, Mantovani et al. (2016) found higher levels of stigma among African-descended communities living in the UK due to strong cultural beliefs (e.g., cohesion among family members and church-based faith). A total of 26 participants were recruited for interviews. The researchers postulated low desire to seek mental health services among African-descended communities in the UK due to higher levels of stigma associated with the mental illness. Similarly, Han, Cha, Lee, and Lee (2017) conducted a study in the U.S. with Korean immigrants to study the impact of cultural values on levels of stigma toward mental illness. A total of 18 Korean immigrants were recruited to participate in this qualitative study. The Han et al. study emerged different themes (e.g., collectivism, saving face, indirect approach and cultural based services) pertaining to Korean culture were found to be associated with higher levels of stigma and could lead to severe psychotic symptoms among persons with mental illness. For example, the researchers found the majority of participants indicated a strong desire to hide the mental illness to avoid public shame and embarrassment. In response, the researchers stressed the person with mental illness could develop severe psychotic symptoms (e.g., disorganized thinking) if the person did not receive early treatment. Additionally, Han et al. suggested designing and implementing psychoeducational interventions by focusing on families' cultural values and beliefs as culturally informed interventions might help both families and PWS to overcome religious and/or cultural stereotypes attached to the mental illness. To summarize, stigma levels toward persons with mental illness are higher among people with low

education, low-income, and they vary based on different cultural backgrounds. Because schizophrenia is such a disabling condition, there is an incessant need to provide culturally informed psychoeducation regarding mental illness as stigma levels tend to be higher among some racial/ethnic groups than others.

In addition to studies on culture and stigma, the researchers (e.g., Phalen et al., 2016 & Gurak, Weisman, and Ironson, 2017) reported an association between religion and stigma in terms of treatment outcomes among PWS. For example, Phalen et al. studied the impact of public religious views and the contents of auditory hallucinations among PWS with regard to stigma toward PWS. The researchers randomly assigned vignettes among two groups. The first group received a vignette of a PWS hearing positive voices (e.g., inspiring) and the second group received a vignette of a PWS hearing negative voices (e.g., offensive). The researchers presented half of the vignettes with the voice of Abraham Lincoln and the other half of the vignette with the voice of God. The researchers found participants who were more religious reported less desire for social distance and lower levels of stigma when they read about PWS hearing God's voice. Participants who heard the voice of Abraham Lincoln perceived PWS to be more dangerous. The researchers concluded strong religious beliefs were linked to early termination of mental health services and, thus, suggested a need for collaboration among the mental health system and religious organizations. This study has indicated the religious influences in shaping the negative attitudes among public toward PWS.

Similarly, Gurak et al. (2017) explored religion as a coping method among families of PWS. The researchers also examined the impact of religious beliefs on treatment outcome of PWS. Gurak et al. surveyed 64 family members of PWS to examine the relationship between families' religious beliefs and attrition in coping with schizophrenia. The sample included

families from diverse ethnic/racial backgrounds, including Whites (19%), African Americans (30%), Hispanic/Latino (49%), and Other (3%). The researchers found an association between strong religious beliefs and early dropout rates of mental health services among PWS. That is, families who derived their strength from religious beliefs in order to cope with the schizophrenia condition did not perceive mental health services as an effective method of coping with schizophrenia. Therefore, the research (e.g., Phalen et al., 2016; Gurak et al., 2017) conducted on stigma and religion has highlighted the importance of culturally informed programs to educate family members about schizophrenia to increase treatment adherence among PWS. In sum, religion and cultural influences profoundly impact stigma levels and utilization of mental health services in PWS and their family members.

Hispanic Attitudes

Attitudes toward mental illness have been found to be more negative among Hispanics compared to European-Americans (Dassori et al., 1995; Fripp & Carlson, 2017; O'Hare, Shen, & Sherrer, 2016). Moreover, higher lifetime suicidal attempts have been reported among Mexicans living with schizophrenia compared to European Americans (O'Hare, Shen, & Sherrer, 2016). Data from the Substance Abuse and Mental Health Services ([SAHMSA], 2015) indicates African Americans and Hispanic Americans utilize mental health services at about half the rate as European Americans. Researchers have investigated a correlation between stigma and culture among Hispanics (Barrera et al., 2013; Corrigan, Torres, Lara, Sheehan, & Larson, 2017; Karno & Edgerton, 1969; Weisman, Gomes, & Lopez, 2003). In addition, there is a negative correlation between higher stigma levels and under-utilization of mental health services among PWS (Durbin, Rudoler, Durbin, Laporte, & Callaghan, 2014; Corrigan et al., 2017; Fripp &

Carlson, 2017) as well as their families (Hernandez & Barrio, 2017; Villalobos et al., 2017; Weisman, Gomes, & Lopez, 2003).

Among Mexican families of PWS, researchers (Caqueo-Urizar, Urzúa, Boyer, & Williams, 2016; Lopez & Wolkenstein, 1990; Villalobos et al., 2017; Weisman, Gomes, & Lopez, 2003) have reported negative attitudes associated with care-giver burden toward PWS, leading to poorer treatment outcome for persons living with schizophrenia. Consequently, poorer negative attitudes among families with strong cultural values (e.g., collectivism) among Mexicans have been found to impact the quality of life of persons living with schizophrenia (Caqueo-Urizar et al., 2016). For example, one core cultural value among Mexican families is *familismo* (Barrera et al., 2013; Karno & Edgerton, 1969), which means family cohesion. Familismo is based on a collectivist approach, which means all family members place high value on unity and trust among each other. Research conducted on mental illness stigma in regard to cultural values has ascertained a relationship between strong family cohesion and the belief it is up to the family to assist the family member with SMI (Karno & Edgerton, 1969; Ramos-Sánchez & Atkinson, 2009). As a result, family members often do not seek mental health services for their family members with schizophrenia. Consequently, it is these salient socio-cultural factors that profoundly impact attitudes toward mental illness.

O'Hare et al. (2016) conducted a study among 132 individuals with SMI (i.e., schizophrenia and major mood disorders) to compare suicidal attempts and trauma among three racial/ethnic groups (i.e., African Americans, European Americans, and Hispanics) with SMI. The researchers found a strong correlation between lifetime trauma and increased suicide attempts among Hispanics with schizophrenia compared to European Americans and African Americans. Moreover, depression, psychosis, and self-injury were reported to be higher among

Hispanics with schizophrenia compared to European Americans. The researchers postulated cultural values could impact stigma levels and thus, suicide attempts among Hispanic population living with SMI. In addition to O'Hare et al. study on suicidal attempts and trauma among people with different ethnic backgrounds, Martinez, Vasquez, Nava, Smith, and Avilla, (2017) investigated stigma levels among 264 university students from different ethnic backgrounds (e.g., Asians, European-Americans, and Hispanics), The researchers revealed significant findings in regards to gender, college major, and ethnicity. For example, results indicated no significant differences in stigma levels among male and female participants. Consequently, the researchers reported lower stigma levels among European Americans compared to Asians and Hispanics. However, further investigation revealed participants from Asian ethnic background reported higher stigma levels as opposed to participants from Hispanic ethnic background. As such, Martinez et al. study has shown consistent results with previous studies (Dassori et al., 1995; Fripp & Carlson, 2017; O'Hare, Shen, & Sherrer, 2016) displaying higher stigma among Hispanics as opposed to European-Americans. In sum, O'Hare et al. and Martinez et al. studies have provided relevant information about debilitating impact (e.g., high suicide rates) of schizophrenia among individuals with schizophrenia and higher stigma levels endorsed by general public from Hispanic background compared to people from other ethnic backgrounds toward PWS.

Knowledge and Schizophrenia

Past studies (e.g., Degnan et al., 2017; Magilano et al., 2017; Mascayano et al., 2016; Thibodeau et al., 2018) have established a strong correlation between stigma and knowledge among people toward PWS. In other words, enhancing knowledge about schizophrenia has been an effective approach to mitigate stigma against PWS. Knowledge regarding PWS has been

shown to increase through multiple sources such as, contact-based, familiarity with PWS, exposure to media, and workshops/trainings (Purba et al., 2017; Villani & Kovess-Masfety, 2017). Consequently, the researchers have documented improved knowledge levels about PWS among families, general public, and health and non-related professionals as a result of psycho-educational interventions (Degnan et al., 2017; Corrigan et al. 2016; Jensen et al., 2017; Maura & Mamani, 2017).

Family

A large body of research has noted the importance of educating family members about schizophrenia to reduce stigmatization toward PWS (Degnan et al., 2017; Maura & Mamani, 2017; McFarlane, 2016; Sin et al., 2017; Weisman, 2005) as negative family attitudes lead to both self and public stigma toward PWS (Krupchanka et al., 2016). Researchers have reported several interventions to increase knowledge about schizophrenia, including family psychoeducation (Dueweke & Bridges, 2017; McFarlane, 2016; Sin et al., 2017), coaching programs (Purba, Suttharangsee, & Chaowalit, 2017), and teaching coping skills (McFarlane, 2016). McFarlane listed several benefits (e.g., reduced levels of psychosocial stress, healthy coping among family members, reduced relapse rates in psychosis, and increased social support from community) of educating families of PWS. In addition, McFarlane associated increased knowledge regarding schizophrenia with reduced levels of stigma toward PWS.

Purba et al. (2017) conducted an intervention-based study to examine the effectiveness of a coaching program for family members of PWS. A total of 100 family members participated in the research. Half of the participants received the coaching program which involved videos, psychoeducation, trainings about schizophrenia, observation, role plays, and telephone follow-up. The remaining participants received routine care (e.g., taking medications) provided by a

psychiatric nurse. The researchers found participants in the coaching program reported increased knowledge about schizophrenia and lower levels of stigma toward PWS compared to participants in the control group. Moreover, the researchers found participants reported a better relationship with the family member diagnosed with schizophrenia after receiving the coaching program. This study has notably indicated the significance of increased knowledge about schizophrenia to mitigate mental illness stigma toward PWS. Purba et al. recommended family coaching programs for future professionals (e.g., psychiatric nurses) to promote knowledge about schizophrenia and to improve attitudes toward family members with schizophrenia. The Purba et al study also underscores the overwhelming need to educate families of PWS as the family is often the first line of defense against stigma toward PWS.

Professionals

Increased knowledge about schizophrenia and reduced levels of stigma has been widely researched among professionals, including general practitioners (Magilano et al., 2017), psychiatrists (Mittal et al., 2014; Ozer, et al., 2017), psychologists (Mittal et al., 2014), psychiatric nurses (Mittal et al., 2014), and social workers (Jensen et al., 2017). According to the research conducted among professionals' attitude toward SMI, mental illness stigma is generally higher among those mental health professionals who have limited knowledge about SMI (Villani, & Kovess-Masfety (2017). Villani and Kovess-Masfety conducted an intervention-based study to examine the effects of a short training on attitudes toward persons with SMI. There were a total of 121 mental health administrators participated in the study. Participants were asked to engage in a four-day workshop about psychosis, which included providing information about psychosis, causes of mental illness, and clinical implications of psychosis. The participants were also asked to spend time with a person having a mental illness. The

researchers found a positive correlation between knowledge and attitudes toward persons with SMI. For example, participants in the experimental group indicated a reduced desire for social distance from persons with SMI, meaning participants felt closer to persons with SMI after spending time with a person who had a mental illness. The participants also endorsed positive attitudes toward mental illness after receiving the workshop about SMI. However, participants in the control group watched a movie about a PWS and perceived that PWS as being more dangerous compared to persons without schizophrenia. The researchers also noted a greater desire for social distance and negative attitudes toward PWS among the control group. The researchers postulated the negative attitudes among the control group were due, in part, to the impact of the media on influencing negative perceptions toward SMI. As such, the research has underscored the role of media in embodying images of persons with mental illness, which could potentially influence viewers' levels of stigma and their knowledge toward mental illness. Clearly, the Villani and Kovess-Masfety study indicates the need for appropriate about schizophrenia-related educational interventions (e.g., contact-based interventions) designed for professionals during their early training in the medical profession.

College Students

Researchers have widely investigated stigma toward PWS in university settings (Bamgbade, Ford, & Barner, 2016; Graves, Cassisi, & Penn, 2005; Hackler et al., 2016; Iheancho et al., 2016; Link,Wells, Phlem, & Yang, 2015; Magliano et al., 2016; Valdivieso-Mora, 2017; Peer et al., 2015; Pingani et al., 2015; Svensson et al., 2014; Webb et al., 2016). For example, Magliano et al. conducted a quasi-randomized controlled study to improve psychology students' attitudes toward PWS among 208 final year psychology students. Findings demonstrated improved students' attitudes toward PWS after participating in a one-month

educational intervention. The students also reported reduced negative perception (e.g., PWS are dangerous) toward PWS. Therefore, the researchers recommended including educational interventions during the final year of coursework for psychology major students to diminish stigma attached to PWS. Similarly, Bamgbade et al. conducted an intervention-based study to measure the levels of stigma and knowledge among third year pharmacy students toward PWS and found consistent results in line with the Magliano et al. study, which showed students' improved knowledge and lowered stigma levels toward PWS. Both researchers reinforced the significance of providing educational interventions to enhance knowledge and mitigate stigma toward PWS among final year college students.

Valdivieso- Mora (2017) studied mental health literacy toward PWS among college students from El Salvador and the U.S. Valdivieso-Mora hypothesized college students from El Salvador would exhibit lower levels of knowledge and higher levels of stigma toward PWS compared to college students from the U.S. A total of 340 students from universities in El Salvador (N=204) and California (N=136) participated in the study. Valdivieso- Mora found students from El Salvador reported lower knowledge, higher stigma and social distance, and lower help-seeking attitudes toward PWS compared to college students in the U.S. In regard to racial/ethnic stigma, Valdivieso-Mora's findings are consistent with other studies (e.g., Dassori et al., 1995 and O'Hare et al., 2016) which reported higher levels of stigma among Hispanics toward schizophrenia than people from non-Hispanic backgrounds.

While there is a plethora of research on mental health professionals' and university students' attitudes toward PWS (e.g., Hackler et al., 2016; Iheancho et al., 2016; Link, Wells, Phlem, & Yang, 2015; Magliano et al., 2016; Mora, 2017; Peer et al., 2015; Pingani et al., 2015), there is a dearth of existing research demonstrating associations between knowledge, stigma, and

schizophrenia among undergraduate students. Consequently, there is a gap in the existing literature that has ascertained relationships between knowledge and stigma toward PWS among undergraduate students enrolled in an Hispanic serving institution. Given Hispanics are currently the largest minority cultural group living in the U.S., there is a need to further investigate the relationship between knowledge and stigma among Hispanic students toward PWS in an effort to mitigate stigma and to design culturally relevant trainings/programs for students enrolled in mental health and non-mental health related programs.

There is a paucity of mental health-related research designed to explore differences in both stigma and knowledge about PWS among undergraduate students across racial/ethnic backgrounds and disciplines (Pingani et al. 2015). Retrospectively, Chan, Lee, Yuen, and Chan (2002), in their comparative study between rehabilitation students and business students regarding attitudes toward persons with disabilities, suggested rehabilitation students should create educational programs/workshops to educate students from non-health related fields about disability. Pingani et al. further asserted students from non-health-related fields such as economy and law majors should receive exclusive knowledge and practical experience regarding SMI to combat stigma toward PWS. This is very important as future professionals such as students who are enrolled in different disciplines (e.g., health, education, and engineering) are likely to work with PWS and students' attitudes and knowledge toward PWS should be addressed. Based on previous research (e.g., Pingani et al., 2015), undergraduate students from health disciplines will potentially exhibit lower levels of stigma toward PWS compared to students from non-health disciplines. However, previous studies (Magliano et al., 2017; Nordt et al., 2005; Ozer et al., 2017) conducted among mental health professionals toward PWS has indicated inconsistent results. Therefore, there is a possibility that students from either mental

health or non-mental health-related disciplines will endorse different levels of stigma and knowledge toward PWS.

Most of the existing studies (e.g., Bamgbade et al., 2016; Hackler et al., 2016; Peer et al. 2015; Vogel et al., 2013; Webb et al., 2016) have surveyed students predominantly from one ethnic/racial background (i.e., European Americans) when examining stigma toward PWS and have established a relationship between stigma and knowledge. A few studies have examined African Americans students' attitudes toward PWS (Masuda et al., 2012) and Asian Americans attitudes toward PWS (Bamgbade et al., 2016; Han & Pong, 2015; Kim & Jane, 2016; Wang et al., 2016). However, little is known about Hispanic students' attitudes regarding PWS. Consequently, there is a need for further exploration regarding factors (e.g., media exposure, familiarity with family/friend/employee with schizophrenia, and/or educational workshops/trainings that could influence levels of knowledge and attitudes of people from non-health disciplines enrolled in a Hispanic serving institution. Given the influx of Hispanic students enrolled in universities across the U.S., there exists a significant need to explore the attitudes and knowledge regarding PWS among Hispanic university students in order to develop educational and training programs specific to the needs of Hispanic students. Therefore, the aim of this study is to examine Hispanic college students' attitudes and stigma toward PWS enrolled in a Hispanic serving institution.

CHAPTER III

METHODOLOGY

The present study was designed to ascertain whether a relationship exists between university students' knowledge regarding schizophrenia and university students' self-reported level of stigma toward PWS. This study was conducted to examine the differences between university students' knowledge and stigma levels in regards to their age, gender, race/ethnicity, and across colleges (i.e., health affairs, education, and business) toward PWS. The following section provides a detailed overview of the sampling technique, setting, instrumentation, and data collection procedures. This section will conclude with the detailed description of the data analyses and hypotheses testing.

Sampling Technique

The present study used a convenience sampling to recruit undergraduate university students. Convenience sampling consists of utilizing readily available research participants (Etikan, Musa, & Alkassim, 2016). According to Creswell (2013), convenience samples are appropriate when the limited population of individuals are easily identified or randomized but are reflection of the population that is available and accessible for the data collection process. The sample was drawn from three colleges of the large Hispanic university located at the U.S.-Mexico border. Researchers (e.g., Chan et al., 2002; Pingani et al., 2015) have explored stigma toward PWS among university

students from health (e.g., rehabilitation) and non-health (e.g., economy) related disciplines. Therefore, based on the existing literature, this study explored attitudes and knowledge toward PWS among university students from both health and non-health related disciplines. Undergraduate students were selected from the upper division courses (i.e., juniors and seniors) from each college. Student participants from the College of Health and the College of Education were selected as they represent future mental health professionals who will work in clinical and educational settings where PWS are likely to be seen. Another sample was drawn from the College of Business as these students represent future non-mental health professionals who may work in settings where PWS may be employed. Past researchers have investigated stigma among undergraduate students toward PWS with less Hispanic representation (Hackler et al., 2016; Peer et al., 2015; Vogel et al., 2013); therefore, the present study assessed stigma and knowledge among Hispanic students toward PWS in an effort to understand and enhance knowledge about schizophrenia and reduce stigma toward PWS among Hispanics.

Power Analysis

For the present study, a medium effect size was expected at an alpha level of .05 at the 90% confidence level with a 50% response distribution determined that a total of 269 student participants were needed for the present study. The power analysis was conducted by using the total number of Hispanic students' population (i.e., 47,910) enrolled in an undergraduate program in all three colleges to determine the sample size.

Instrumentation

The instruments used for the collection of data in this study were a demographic survey (Appendix A), the Attribution Questionnaire ([AQ-27], Corrigan et al., 2003) (Appendix B), the Error Choice Test ([ECT], Michaels & Corrigan, 2013), and the Marlowe-Crowne Social Desirability Scale ([SDS-13], Reynolds, 1982) (Appendix C). The instruments, excluding the demographic measure, have been used in settings such as mental health facilities, universities, community colleges, communities, and job settings and possess well established psychometric properties of reliability and validity. The demographic measure were comprised of a set of questions for the purpose of obtaining background information of the student participants, including their age, gender, race/ethnicity, college major, and familiarity with schizophrenia and general mental illness.

The *Attribution Questionnaire* ([AQ-27], Corrigan et al., 2003) was developed to measure nine stereotypes (blame, anger, pity, help, dangerousness, fear, avoidance, segregation, and coercion) frequently attributed to PWS. The AQ-27 has been tested for psychometric properties in the context of stigma with different populations such as Spanish speaking people (Muñoz, Guillén, Pérez-Santos, & Corrigan, 2015), nurses (Ihalainen-Tamlander, Vähäniemi, Löyttyniemi, Suominen, & Välimäki, 2016), and university students (Pingani et al., 2015). Confirmatory factor analysis has established the test-retest reliability and validity of the instrument (Corrigan & Watson, 2002). Pingani et al. performed a confirmatory factor analysis to measure the validity of the instrument. The analysis yielded the Goodness of fit index to be (.90) and internal consistency of Cronbach's alpha to be (0.65). Therefore, confirmatory analysis indicated

good reliability and validity of the instrument. Furthermore, Marques, Barbosa, and Queirós (2011), reported acceptable internal consistency of (.83) in their study with university students at Portugal University. The aforementioned studies have demonstrated the AQ-27 is a reliable and valid instrument to measure stigma among university students toward PWS. The AQ-27 measures all nine stereotypes via a short vignette that describes a fictitious 30-year-old male with schizophrenia. High scores on the AQ-27 correlate with heightened stigma toward PWS.

The *Error Choice Test* ([ECT], Michaels & Corrigan, 2013) was designed to measure people's knowledge regarding SMI. The ECT is a 14-item scale using *true* and *false* answers (*true* responses are coded as "A" and *false* responses are coded as "B"). For example, one item reads as, "One type of psychotherapy, cognitive behavior therapy, has been shown to reduce the psychotic symptoms of schizophrenia." Michaels and Corrigan tested the ECT's psychometric properties in three distinct populations: college students, mental health providers, and consumers. Michaels and Corrigan reported test-retest reliability ranged from fair (.50) to good (.70). Michaels et al. (2014) administered the ECT among mental health providers and reported the ECT is the direct measure of the stigma toward SMI, thus demonstrating construct validity. Each item on this scale is scored either *one* or *zero*. Total scores range from zero to 14, where higher scores signify greater bias or prejudice and limited knowledge regarding persons with SMI.

The *Social Desirability Scale* ([SDS-13], Reynolds, 1982) was developed to measure the social-desirability of students' participants due to self-report measure. The short form of SDS scale contains 13 items, adapted from Marlowe-Crowne social desirability scale (Crowne & Marlowe, 1960; Reynolds, 1982). The SDS is a 13-item

scale using *true* and *false* answers (*true* responses are coded as "0" and *false* responses are coded as "1"). For example, one item reads as, " No matter who I'm talking to, I'm always a good listener." The reliability and validity of SDS short version have reported to be good. For example, researchers (e.g., Ballard, 1992; Loo & Thorpe, 2000; Loo & Loewen, 2004) reported an acceptable internal consistency (i.e., $\alpha = .70$) by conducting confirmatory factor analysis in their study. The SDS scale comprised of statements regarding individuals' personal attitudes and traits, which could be marked as either *true* or *false*.

Procedure

To conduct the research study, permission from the Institutional Review Board (IRB) was obtained. After approval from the IRB, the doctoral student investigator contacted the Office of the Dean of Research of the College of Health, the College of Education, and the College of Business and obtained permission to contact the undergraduate coordinators of each department within each of the three colleges to obtain a list of undergraduate courses. After approval from the deans, the undergraduate coordinators from each department were contacted to obtain a list of upper-division courses (juniors and seniors). Inclusion criteria for the selected courses was courses which have a minimum of 25 students per class size.

The doctoral student investigator contacted professors from each of the upper-division courses to obtain permission to administer a 30-minute survey during the portion of their lecture time which will have the least negative impact on students' academic progress. The doctoral student investigator selected professors who have agreed based on the class size from the largest to smallest until the desired sample size is accomplished

from each college. For example, the doctoral student investigator rank ordered the classes from the largest (e.g., 50) to the smallest (e.g., 25) until the required sample size was attained. When the doctoral student investigator unable to reach the desired sample size within two weeks, the minimum course was lowered to a minimum of 15 students per course.

After obtaining permission to administer the survey from professors, the doctoral student investigator scheduled dates and times to attend their courses. Prior to administration of the surveys, the doctoral student investigator read an IRB-approved recruitment script containing a brief overview of the study to student participants. The IRB-approved script was also included an invitation for students to enter a drawing for a $75 Amazon gift card as an incentive to participate in the study. Students were informed there will be only one gift card winner and that they will need to provide their e-mail address on the first page of the survey if they wish to be included in the drawing.

The participation in the study was announced as voluntary and students who agreed to participate were asked to complete the survey packet after students signed the consent form. Each survey packet consisted of an informed consent form, the demographic questionnaire, the AQ-27 (Corrigan et al., 2003), the ECT (Michaels & Corrigan, 2013), and the SDS (Reynolds, 1982). Students who choose not to participate in the study were asked to remain quietly in their seats while other students completed the surveys.

Surveys were then collected by the doctoral student investigator and a short debriefing regarding the survey was provided to the students. The doctoral student investigator was then collected the survey packets from the students and thanked them for

their participation in the study. The surveys were coded so the course and section number could be easily identified. Each survey was coded with a CRN number which represented a section number. The surveys were locked in doctoral student investigator office desk that is located in the Ph.D. Student lab, Health Sciences West-1.272. In order to retain confidentiality of the student participants, completed surveys were encrypted and stored in a locked file cabinet and only the doctoral student investigator has access to the data.

Data Analyses and Hypotheses Testing

The data of this study was analyzed utilizing the IBM Statistical Package for the Social Sciences (SPSS) version 23 (2015) statistical package. Descriptive statistics, including the mean, median, standard deviation, and frequency were reported. Inferential statistics was used to test research hypotheses. The null hypotheses were tested using *F* and *t* distribution at the .01 and .05 levels of significance. This study primarily used four statistical analyses (1) Pearson's product-moment correlation, (2) independent samples t-test, (3) one-way analysis of variance, and (4) two-way analysis of variance to test research hypotheses. The data was also assessed for violations of assumptions considering for different statistical analyses.

Hypotheses Testing

HϕI: There is no relationship between university students' self-reported stigma toward persons with schizophrenia and their knowledge regarding schizophrenia.

Pearson's product-moment correlation. The overall scores from the Attribution Questionnaire ([AQ-27], Corrigan et al., 2003) were correlated with scores from the Error Choice Test ([ECT], Michaels & Corrigan, 2013) to test this hypothesis.

A two-tailed alpha level of .01 was used to determine the statistical significance of the correlation. The assumptions for a Pearson's product-moment correlation were checked for the following: absence of outliers, related pairs, linearity, and homoscedasticity (Puth, Neuhäuser, & Ruxton, 2014). The level of measurement for both variables (i.e., knowledge and stigma) was continuous.

HϕII: There is no difference between university students' gender, age, and race/ethnicity and their self-reported stigma toward persons with schizophrenia.

HϕIII: There is no difference between university students' gender, age, race/ethnicity and their knowledge regarding persons with schizophrenia.

Independent samples t-test. An independent samples t-test was conducted to determine if there is a difference exists between two independent variables (i.e., men and women) on a continuous dependent variable. The second hypothesis examined the difference in stigma scores among male and female student participants. The overall scores from the AQ-27 (Corrigan et al., 2003) were calculated for both male and female participants. Similarly, to test the hypothesis three an independent t-test was utilized to determine the difference in knowledge scores among male and female participants. An alpha level of 0.05 was used to determine the statistical significance. The assumptions for independent samples t-test were checked for the following: absence of outliers, normality of distribution, and homogeneity of variance (Pituch, Whittaker, & Stevens, 2015). The level of measurement for independent variable (i.e., gender: male and female) was nominal and level of measurement for dependent variables (i.e., stigma and knowledge scores).

A two-way ANOVA. A two-way ANOVA was utilized to determine if there is an interaction effect between the two independent variables (i.e., age and race/ethnicity) on a continuous dependent variable (i.e., stigma scores). For analysis purposes, age was categorized under four quartiles (i.e., 1=18-21 years, 2= 22-23 years, 3= 24-25 years, and 4= 25 and above) by utilizing SPSS computing variables function. Therefore, age was converted into nominal variable to perform a two-way ANOVA. The assumptions for a two-way ANOVA were checked for the following: normality of variables, three independent variables consisting of two or more categorical variables and homogeneity, and the dependent variable will be measured at the continuous level.

Similarly, a two-way ANOVA was also used to test hypotheses three: There is no difference between students' age and race/ethnicity and knowledge toward PWS. A two-way ANOVA will determine if there is an interaction effect between the three independent variables (i.e., age and race/ethnicity) on a continuous dependent variable (i.e., knowledge scores). The assumptions for a three-way ANOVA were checked for the following: normality of variables, three independent variables consisting of two or more categorical variables, and the dependent variable will be measured at the continuous level.

HϕIV: There is no difference between university students across colleges and their self-reported stigma.

HϕV: There is no difference between university students across colleges and their knowledge regarding schizophrenia.

One-way ANOVA. There is no difference between university students across colleges and their scores on a stigma scale. A one-way ANOVA was conducted to

examine the difference between university students' major (i.e., education, business, health affairs) on a continuous dependent variable (i.e., stigma scores). The assumptions for one-way ANOVA were checked for the following: absence of outliers, normality of distributions, and homogeneity of variance. Similarly, to test the hypothesis four one-way ANOVA was utilized to examine the difference between university students colleges (i.e., education , business, health affairs) on a continuous dependent variable (i.e., knowledge scores).

CHAPTER IV

RESULTS

The purpose of the present study was to ascertain whether a relationship exists between university students' knowledge regarding schizophrenia and their self-reported level of stigma toward persons with schizophrenia (PWS). The study also examined the difference between student demographics (i.e., age, gender, and race/ethnicity) and their self-reported stigma and knowledge about PWS. The study further examined the difference between students across three colleges (i.e., health affairs, education, and business) and their self-reported stigma and knowledge about PWS. A total of 297 students completed the surveys, however one was incomplete, resulting in a total of 296 completed surveys.

The results of the present study will be presented as followed: (1) description of the students' demographics (i.e., age, gender, ethnicity, and college); (2) students' familiarity with PWS and their knowledge regarding PWS through multiple resources (e.g., self-directed readings, YouTube, and workshops); (3) descriptive analyses of the survey instruments; and (4) data analyses for hypotheses testing.

Sample Descriptive Statistic Information

Data was collected from the three colleges of the university: The College of Health, the College of Education, and the College of Business. The

study sample comprised of 297 students. Upon completion, students returned completed surveys to the researcher. Only one survey was not utilized for the analysis due to missing data. Students age ranged from 18- 58 years (n = 296, 99.6%). The study sample consisted of 52 (17.5%) males and 244 (82.2%) females. Utilizing the chi-square independence analysis ($\chi^2 = 124.5$, df = 1, $p < .050$) it is evident there were significantly more females than males. Students age ranged from 18- 54 years with a mean age of 24.7 years (SD = 6.76). The majority of students (n = 285, 96%) self-identified as Hispanic/Latino. Other racial/ethnic groups consisted of White (non-Hispanic) (n = 5, 1.6 %), Black/African American (n = 3, 1.01%), Asian (n = 2, .6%) and Other (n = 1, .3%). Only one student (n = 1, .3%) did not choose to indicate any race/ethnic group. As assessed by chi-square of independence ($\chi^2 = 253.63$, df = 1, $p < .05$), Hispanic students were significantly higher in number than students from other ethnic backgrounds. The demographic information of students' age, gender, and ethnicity is presented in Table 1.

Table 1

Demographic Data of Participants: Age, Gender, and Ethnicity

Demographic Variable	N	Percentage
Gender		
Male	52	17
Female	244	82
Other	1	.3
Total	297	100
Age		
18-21	110	37
22-23	73	25
24-25	43	15
26 and above	69	23
Total	295	100
Ethnicity		
Hispanic/Latino	285	96
White (non-Hispanic)	5	2
Black/African	3	1
Asian	2	0.6
American Indian/Alaska Native	0	0
Native Hawaiian/Pacific Islander	0	0
Other	1	0.3
Total	296	100

The total number of the university students from each of the three university colleges (i.e., health, education, and business) was also calculated. The sample consisted of undergraduate students who were enrolled in Junior/Senior level courses. A total of 296 students were surveyed from three colleges (1) health (n = 131, 44.2%), (2) education (n = 99, 33.4%), and (3) business (n = 66, 22.3%). The following data is presented in Table 2.

Table 2

Demographic Data of Students: Colleges

Demographic Variable	N	Percentage
Colleges		
Health Affairs	131	44.2
Education	99	33.4
Business	66	22.4
Total	296	100

Other demographic data included questions regarding students' familiarity with PWS. A total of 296 students responded to the question about familiarity with PWS. The majority of the students (n = 253, 85%) indicated they were familiar with PWS and others (n = 44, 15%) did not report any familiarity with PWS. Participants who choose to report their familiarity with PWS were asked to report their relationship with PWS. For example, the majority of students (i.e., n = 253, 85%) reported having at least one type of relationship (e.g., parent, spouse, brother/sister, friend, work-related, and other) with a

PWS. When queried as to whether students' had a relationship with PWS, the majority of students reported having an "Other" (e.g., friend's sibling, ex-partner, and uncle) relationship with PWS (n = 192, 75%) followed by friend (n = 48,19%), brother/sister (n = 3, 2%), work-related (n = 5, 2%), parent (n = 2, 1%). In addition to asking students about their familiarity and relationship status with PWS, students queried about the duration of their relationship(s) with PWS. A total of 47 (16%) students reported duration of relationship with PWS. For example, most students (n = 14, 30%) reported knowing a PWS for one to five years, followed by students (n = 12, 25%) who knew PWS for more than 15 years. The data is summarized in Table 3.

Table 3

Familiarity, Relationship Status, and Duration of Relationship with PWS

Demographic Variable	N	Percentage
Knowing a PWS		
Yes	252	85
No	44	15
Total	296	100
Relationship Status with PWS		
Parent	2	1
Spouse/Partner	0	0
Brother/Sister	3	2
Friend	48	19
Work-Related	5	2
Other	192	75
Total	250	100
Duration of Relationship with PWS		
Less than 1 year	11	23
1- 5 years	14	30
6 -10 years	6	13
11 – 15 years	4	8
More than 15 Years	12	25
Total	47	100

Students were also asked about their interactions with PWS. A total of 269 students rated their interactions with PWS from items never (n = 207, 78%), 1-2 interactions (n = 32, 11%), 3-4 interactions (n = 10, 4%), 5-10 interactions (n = 9, 3%) to I interact daily (n = 11, 4%) reported fewer to several interactions with a person having schizophrenia, while majority of the students (n = 207, 78%) reported that they have never interacted with PWS. Data is given in Table 4.

Table 4

Frequency of Interactions with PWS

Demographic Variable	N	Percentage
How frequently have you interacted with PWS		
Never	207	78
1-2 interactions	32	11
3-4 interactions	10	4
5-10 interactions	9	3
I interact daily	11	4
Total	269	100

Other descriptive data collected were centered on the students' knowledge of schizophrenia. Several questions were asked based on students' knowledge about PWS. For example, students were asked if they took any coursework in abnormal psychology. Majority of students (n = 188, 65%) indicated that they have not taken any course in abnormal psychology and about 35% of students (n = 101) indicated that they have taken course in abnormal psychology. Furthermore, students were also asked about their

knowledge of schizophrenia. A total of (n = 292, 100%) students reported knowledge about schizophrenia and majority of the students (n = 178, 60 %) reported having atleast minimal knowledge about schizophrenia. This data is shown below in Table 5.

Table 5

Students' Knowledge of Schizophrenia

Demographic Variable	N	Percentage
Coursework on Abnormal Psychology		
Yes	101	35
No	188	65
Total	289	100
Students' Knowledge of Schizophrenia		
No Knowledge	45	15
Minimal Knowledge	178	60
Moderate Knowledge	67	24
High Knowledge	2	1
Total	292	100

Additionally, students were asked about their sources of knowledge (i.e., formal coursework, internet video such as You Tube, self-directed readings, movies, workshops/conferences, and other). The majority of the students (n = 296, 100%) indicated they obtained knowledge about schizophrenia through multiple resources such as (1) Internet videos, self-directed readings, and movies (n = 75, 27%), (2) formal coursework and internet videos (n = 107, 36%), (3) movies and self-directed readings (n

= 102, 34%), and (4) other and formal coursework (n = 69, 23%). The data is provided in Table 6.

Table 6

Sources of Knowledge toward PWS

Demographic Variable	N	Percentage
Ways I have obtained knowledge about Schizophrenia		
Formal Coursework + Internet Video	107	36
Internet Video + Self-directed Readings + Movies	75	27
Movies + Self-Directed Readings	102	34
Workshops	8	3
Other + Formal Coursework	69	23
Total	296	100

Descriptive Analyses of Survey Instruments

All survey instruments, (1) Attribution Questionnaire-27 (AQ-27) measuring stigma toward PWS, (2) Error Choice Test (ECT) measuring knowledge regarding schizophrenia, and (3) Social Desirability Scale-Short Form (SDS-13) were analyzed for internal reliability. A Cronbach's Alpha was evaluated for survey instruments. The descriptive statistics for the survey instruments are presented in Table 7.

AQ-27

The AQ-27 scale was utilized to examine students' stigma toward PWS. The AQ-27 scale is comprised of 27 items which measure nine sub-factors (i.e., blame, anger, pity, help, dangerousness, fear, avoidance, segregation, and coercion). A total of six

items of the AQ-27 (AQ7, AQ8, AQ16, AQ20, AQ21, AQ26) were reverse scored. All items were calculated for the overall score and the mean was calculated. Cronbach's Alpha was calculated and is presented in Table 7. Higher scores on the AQ-27 scale represented higher stigma toward PWS.

Table 7

Descriptive Statistics for Survey Instruments

	No. of Items	*N*	*M*	*SD*	*Min*	*Max*	*Alpha Rel.*
AQ-27	27	296	118.51	22.05	30	182	.77
ECT	14	296	6.66	2.42	0	12	.48
SD	13	296	7.74	2.66	1.0	13.0	.60

Note. M = Mean, SD = Standard Deviation, Min = Minimum Score, Max = Maximum Score

ECT

The ECT scale is comprised of 14 items which measure participants' knowledge regarding severe mental illness (SMI). A total of five items (1,4,5,7, and 13) were reverse scored prior to summing up the overall items. The ECT scale was checked for reliability by performing Cronbach's Alpha, which is given in Table 7. Lower scores on ECT scale represented higher levels of knowledge regarding SMI.

SDS-13

Students were also checked for social desirability to assess whether their responses reflected their true beliefs and were not socially biased. The SDS is comprised of 13 items (1, 2, 3, 4, 6, 8, 11, and 12) and a total of eight items were reverse scored

prior to summing up all items. The alpha reliability for the SDS scale was checked and is presented in Table 7.

Scale Means, Standard Deviations, and Frequencies

AQ-27. Students stigma was assessed through the AQ-27 (Corrigan et al., 2003) scale. A total of 27 questions about a fictitious man "Harry" were based on a Likert scale, ranging from 1(*"not at all"*) to 9 *("very much")* responses. The AQ-27 scale is presented in Table 8. Final analysis of individual items revealed significant information about stigma toward PWS. For example, students scored high (SD = 7) on the AQ-27 scale on a total of seven items. The seven items are as followed: (1) If I were in charge of Harry's treatment, I would require him to take his medication, (2) I would be willing to talk to Harry about his problems, (3) How likely is it that you would help Harry, (4) How much concern would you feel for Harry, (5) How much sympathy would you feel for Harry, (6) How certain would you feel that you help Harry, (7) If I were an employer, I would interview Harry for a job. Specifically, students' responses indicated if they were in charge of Harry they would require him to take his medication. For example, most students indicated they would interview Harry for a job and most students indicated they will feel much concern for Harry.

Table 8

Mean and Standard Deviations of Individual Items on the Attribution Questionnaire (AQ-27) Scale Presented in Rank Order

AQ-27	Mean	SD
If I were in charge of Harry's treatment, I would require him to take medications.	7.52	2.06

I would be willing to talk to Harry about his problems.	7.22	2.07
How likely is it that you would help Harry?	6.88	2.05
How much concern would you feel for Harry?	6.63	2.03
How much sympathy would you feel for Harry?	6.55	2.05
How certain would you feel that you would help Harry?	6.54	2.04
If I were an employer, I would interview Harry for a job.	6.16	2.40
If I were a landlord, I probably would rent an apartment to Harry.	5.77	2.35
How much do you agree that Harry should be forced into treatment with his doctor even if he does not want to?	5.12	2.61
I would share a carpool with Harry every day.	4.79	2.36
How controllable, do you think is the cause of Harry's present condition?	4.78	2.38
I would feel unsafe around Harry.	4.35	2.44
I would feel pity for Harry.	4.29	2.59
How dangerous would you feel Harry is?	4.04	2.19
How frightened of Harry would you feel?	3.63	2.25
How scared of Harry would you feel?	3.61	2.18
Harry would terrify me.	3.50	2.30
How responsible, do you think, is Harry for his present condition?	3.40	2.54

I think Harry poses a risk to his neighbors unless he is hospitalized.	3.35	1.98
I would feel threatened by Harry.	3.30	2.15
If I were in charge of Harry's treatment, I would force him to live in a group home.	2.94	2.10
I would feel aggravated by Harry.	2.89	1.97
How much do you think an asylum, where Harry can be kept away from his neighbors, is the best place for him?	2.64	1.88
How irritated would you feel by Harry?	2.60	1.81
I think it would be best for Harry's community if he were put away in a psychiatric hospital.	2.48	1.97
How angry would you feel for Harry?	1.93	1.52
I would think that it was Harry's own fault that he is in the present condition.	1.44	1.22
Total	4.4	

ECT. The final analysis of the percentages of individual items on the ECT (knowledge) scale (Michaels & Corrigan, 2013) yielded interesting findings. For example, three items on the ECT scale endorsed limited knowledge regarding PWS. Specifically, the majority of students (n = 196, 66.7%) believed, " Adolescents with schizophrenia are frequently truant from school". Students (n= 186; 63.3%) also believed the divorce rate among the general population is about 50% compared to 70% among people with mental illness. Students (n=180; 61 %) also believed PWS are hospitalized

more than four times for their mental illness over a one-year period. Such responses regarding PWS indicated limited knowledge toward PWS. All items are presented in Table 9.

Table 9

Percentages of Individual Items on the Error Choice Test (ECT) Scale Presented in Rank Order

ECT	Percentage in agreement
Adolescents with schizophrenia are frequently truant from school.	67
What is the divorce rate among people who experience mental illness? a. Greater than 70% b. Less than 50%	a. 63
Considering people with schizophrenia, what is the average number of separate hospitalizations for their mental illness over a one-year period of time? a. 4 or more b. 2 or more	a. 61
For those with serious mental illness, what percent of treatment should be dedicated to medication compliance? a. Greater than 80% b. Less than 50%	a.58
A person with schizophrenia is capable of being a physician or medical doctor.	56
Neglectful parenting is somewhat responsible for the beginning of a serious mental illness	55

Based on the capabilities of people with schizophrenia, school counselors should recommend beginning a job-training program rather than continuing in the regular curriculum.	51
People with schizophrenia should be allowed to use an online dating service.	46
People with schizophrenia make up what percent of the homeless population? a. 5% b. 25%	b. 42
People with severe mental illness are capable of establishing an intimate long-term relationship of a sexual nature.	39
People with severe mental illness cannot maintain private residences.	38
People with schizophrenia are likely to steal from their family members.	38
People with schizophrenia benefit the least from services like psychotherapy.	30
One type of psychotherapy, cognitive-behavioral therapy, has been shown to reduce the psychotic symptoms of schizophrenia	19

SDS-13. Students responses were also measured on a Social Desirability Scale-Short Form ([SDS-13], Reynolds, 1982) to ascertain if participants' responses represented their true feelings or if they felt obligated to answer in a socially desirable manner. One samples t-test was performed to evaluate students' sample mean from a population mean (Reynolds, 1982). The t-test yielded a mean value of 7.61, $t(295) = .838$, $p > .05$. Therefore, there was no significant difference between the SDS sample mean and the average mean (7.61) taken from the Marlowe-Crowne short from scale

(Reynolds). These findings indicate students did not report knowledge and stigma toward PWS in a socially desirability manner.

Data Analyses for Hypotheses Testing

The data was imported to the Statistical Package Social Sciences (SPSS) version 23 (2015) and analyzed using correlational analysis, independent-samples t-test, and analysis of variance (ANOVA). The purpose of conducting a correlational analysis (i.e., Pearson's product-moment) was to examine the strength of a linear relationship between two continuous variables (Pearson, 1920). The purpose of conducting an independent-samples t-test was to determine whether a difference existed between a nominal level independent variable (e.g. male and female) and a continuous variable (e.g., stigma levels). Additionally, an ANOVA was conducted to determine if there was a statistically significant difference between two or more nominal level independent variables on one continuous dependent variable. The overall results with tables are presented in the ensuing paragraphs.

Correlational Analysis

A correlational analysis using Pearson-product moment was performed to measure the strength of a linear relationship between two variables (i.e., stigma and knowledge) measured on a continuous scale. The null hypothesis tested is given below.

HΦI: There is no relationship between university students' self-reported stigma toward persons with schizophrenia and their knowledge regarding schizophrenia.

A total of 296 students were surveyed regarding their self-reported stigma (M = 117, SD= 23.3) toward PWS and their knowledge (M = 117, SD= 23.3) regarding schizophrenia. A Pearson's r data analysis indicated a weak positive linear correlation r (294) = .191, p <

.01. Therefore, students who reported higher stigma levels toward PWS reported lower knowledge levels regarding schizophrenia. The summary of Pearson's correlations is presented in Table 10.

Table 10

Summary of Pearson's Correlations

	N	Mean	SD	df	r	*P*
ECT	296	6.61	2.47	294	.19*	.001
AQ-27	296	117.51	23.2			

*p < .01

The data also generated a correlation coefficient of .19 which indicates a significant relationship (p < .01) between stigma and knowledge. The correlation coefficient was also significant between various items on the AQ-27 scale (i.e., blame, anger, danger, fear, pity, avoidance, help, segregation, and coercion). Upon examination of all scale items, knowledge regarding schizophrenia indicated a significant relationship among six sub-scales on the AQ-27 scale: anger (.18), help (.26), danger (.27), avoidance (.28), segregation (.28), and coercion (.25). Table 11 summarizes the Pearson's correlations between AQ-27 subscales and the ECT scale.

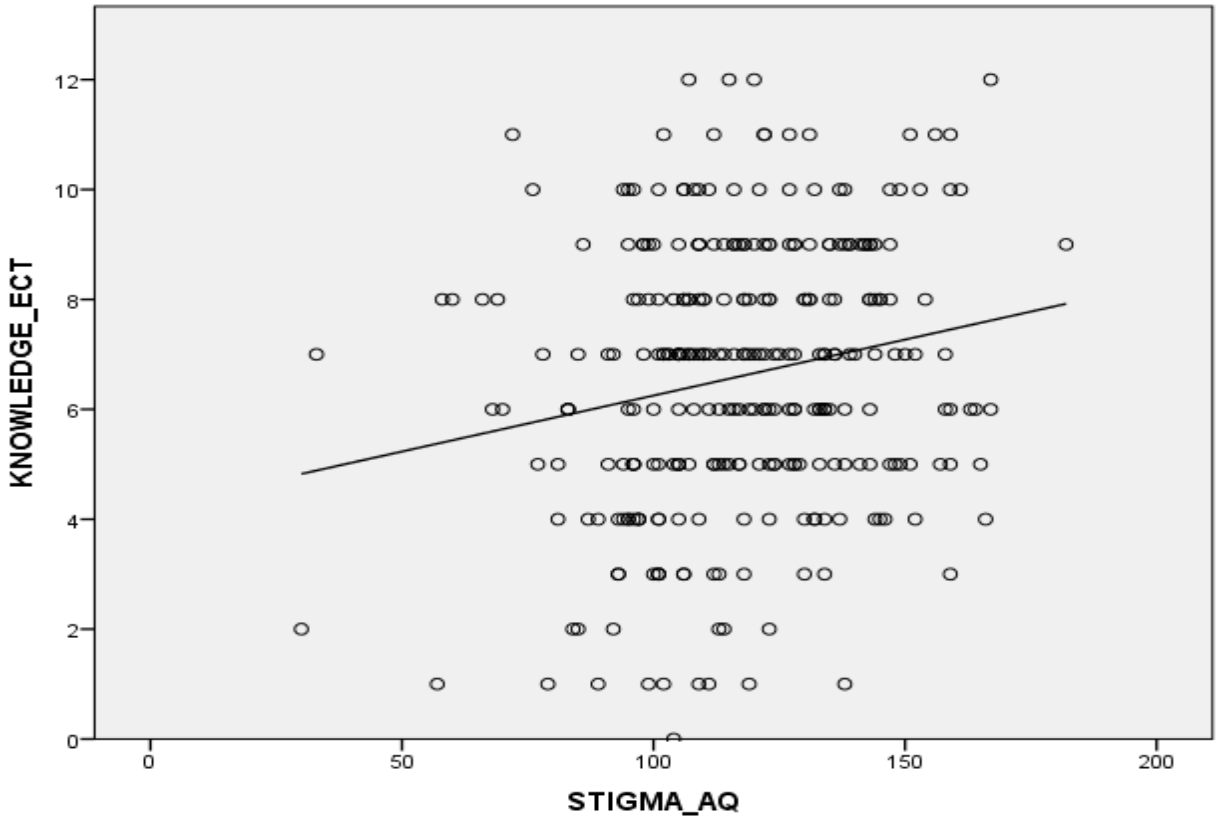

Figure 4: Scatterplot of ECT and AQ-27 Scale

Table 11

Pearson Correlations: An AQ scale and Subscales, and ECT Scale

	ECT	BL	AG	PT	HP	DG	FR	AD	SG	CR	AQ
ECT	1	−.07	.18**	.04	.15	.27**	.27**	.28**	.28**	.25**	.19**
BL		1	.21**	−.08	−.07	.06	.095	−.078	.098	.23**	.35**
AG			1	.16**	.26**	.64**	.61**	.29**	.56**	.41**	.67**
PT				1	−.10	.32**	.28**	.07	.17**	.29**	.49**
HP					1	.31**	.30**	.59**	.32**	.021	−.11*
DG						1	.87**	.41**	.64**	.49**	.77**
FR							1	.40**	.62**	.46**	.75**
AD								1	.49**	.22**	.054
SG									1	.49**	.62**
CR										1	.70**

*p < .05
** p < .01, ECT = Error Choice Test/Knowledge, BL = Blame, AG = Anger, PT = Pity, HP = Help, DG = Danger, FR = Friend, AD = Avoidance, SG = Segregation, CR = Coercion, AQ = Attribution Questionnaire/Stigma

Independent-samples t-Test

An independent-samples t-test was performed to determine if there were significant differences in students' gender and their self-reported stigma toward PWS. Assumptions of homogeneity of variance were violated, as assessed by Levene's test for equality of variances (p= .036). Moreover, when equal variances were not assumed, data indicated statistical difference in mean scores between males (M =110, SD= 27.3) and females (M= 119, SD= 22.09), t (294) = 2.20, p < .05. Since assumptions of the t-test were violated, a Mann-Whitney *U* test was run to determine if there were differences in stigma scores between male and female participants. Stigma scores were not statistically different between male and females (p > .05). Therefore, the data fails to reject the null hypothesis, indicating no differences in stigma levels between male and female participants toward PWS. The data is summarized in Table 12.

Table 12

Independent-Samples t-Test Results Comparing Males and Females Stigma Scores on AQ-27 Scale

Gender	N	Mean	SD	t	df	*p*
Male	52	110	27.3	2.20	294	.67
Female	244	119	22.0			

a. Independent Variables: Gender (Male = 1 and Female = 2)
b. Dependent Variable: Attribution Questionnaire (AQ-27)

An independent-samples t-test was conducted to determine if there were significant differences in students' gender and their knowledge regarding PWS. There was no statistical difference in mean scores between males (M = 6.56, SD = 2.68), and females (M = 6.62, SD = 2.43), t (294) = − .152, p > .05. Therefore, the data failed to reject the null hypothesis. The results are provided in Table 13.

Table 13

Independent-Samples t-Test Comparing Males and Females Knowledge Scores on ECT Scale

Gender	N	Mean	SD	t	df	*p*
Male	52	6.56	2.68	− .15	294	.87
Female	244	6.62	2.43			

a. Independent Variables: Gender (Male=1 and Female=2)
b. Dependent Variable: Error Choice Test (ECT) Measuring Knowledge Toward PWS

Two-way ANOVA

To examine the differences between students' age and race/ethnicity and their self-reported stigma, the following null hypothesis was tested using a two-way ANOVA:

НΦІІ: There is no difference between university students' gender, age, and race/ethnicity and their self-reported stigma toward persons with schizophrenia.

The interaction effect between age and race on stigma toward PWS was not statistically significant, F (4,412) = .75, p > .05, partial eta square = .010. Therefore, participants' stigma levels toward PWS did not differ based on their age and race/ethnicity. Thus, the data failed to reject the null hypothesis. The summary of a two-way ANOVA is given in Table 14.

Table 14

Summary of a Two-Way ANOVA

	Sum of Squares	df	Mean Square	F
Sum of Squares 1st Factor (Race)	1185.09	4	296.2	.53
Sum of Squares 2nd Factor (Age)	335.30	3	111.76	.20
Sum of Both Factors	1648.80	4	412	.75
Sum of Squares Within	155589	283	549.7	
Total	160123.72	294		

a. Dependent Variable: AQ-27 Scale Measuring Stigma Toward Persons with Schizophrenia

b. Independent Variables: Age (1 = 18-21 years, 2 = 22-23years, 3 = 24-25 years, and 4 = 26 and above), and Race/Ethnicity (2 = Asians, 3 = Black/African, 4 = Hispanic/Latino, 6 = White (non-Hispanic), and 7 = Other)

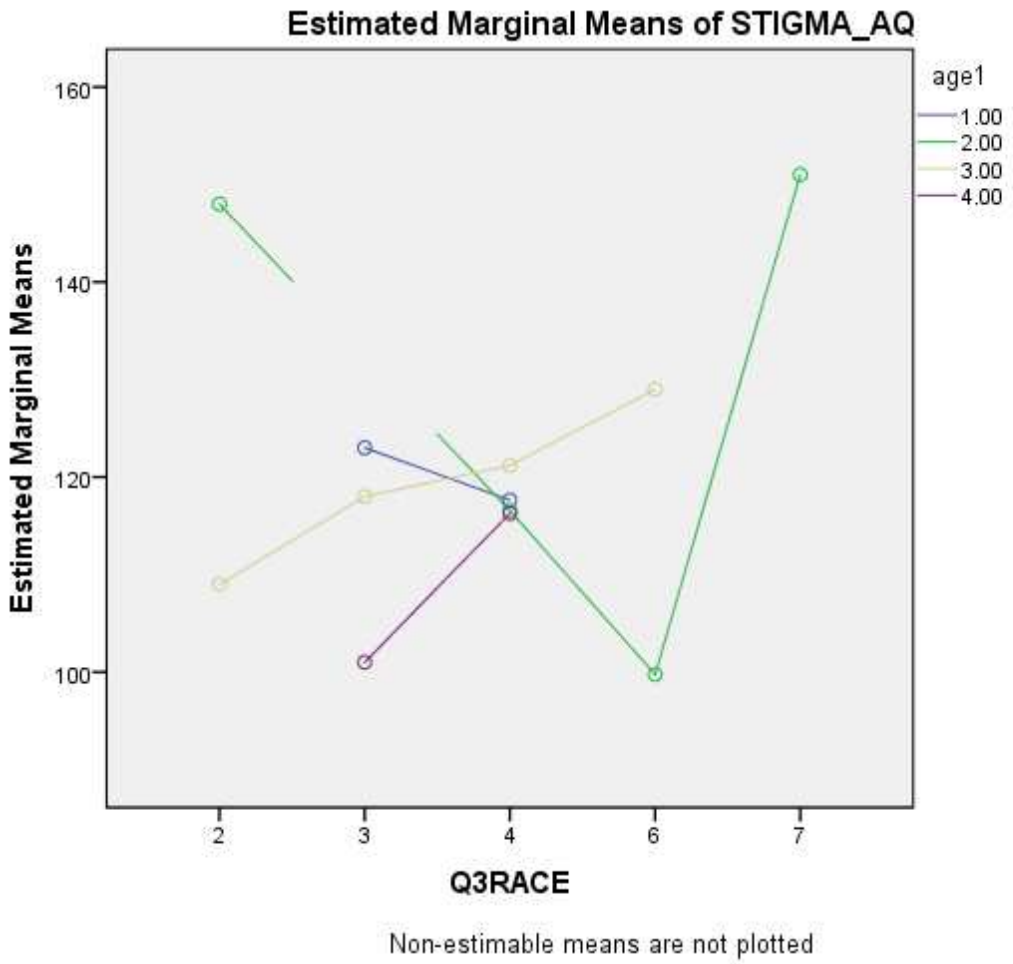

Figure 5: The Interaction Effect between Age and Gender on Stigma

To examine the differences between students' age and race/ethnicity and their knowledge, a two-way ANOVA was conducted to test the following null hypothesis:

HΦIII: There is no difference between university students' gender, age, and race/ethnicity and their knowledge regarding persons with schizophrenia.

Utilizing a two-way ANOVA, results showed the interaction effect between age and race/ethnicity on stigma toward PWS was not statistically significant, F (4,6.18) = 1.00 p >.05, partial eta square = .014. Therefore, participants' knowledge toward PWS did not differ based on their age and race/ethnicity. Thus, the data failed to reject the null hypothesis. The data is presented in Table 15.

Table 15

Summary of Two-Way ANOVA Measuring Knowledge

	Sum of Squares	df	Mean Square	F
Sum of Squares 1st Factor (Race)	33.75	4	8.43	.24
Sum of Squares 2nd Factor (Age)	23.78	3	7.92	.27
Sum of Both Factors	24.73	4	6.18	.40
Sum of Squares Within	1740.0	283	6.14	
Total	1799.47	294		

a. Dependent Variable: AQ-27 Scale Measuring Stigma Toward Persons with Schizophrenia

b. Independent Variables: Age (1 = 18-21 years, 2 = 22-23years, 3 = 24-25 years, and 4 = 26 and above), and Race/Ethnicity (2 = Asians, 3 = Black/African, 4 = Hispanic/Latino, 6 = White (non-Hispanic), and 7 = Other)

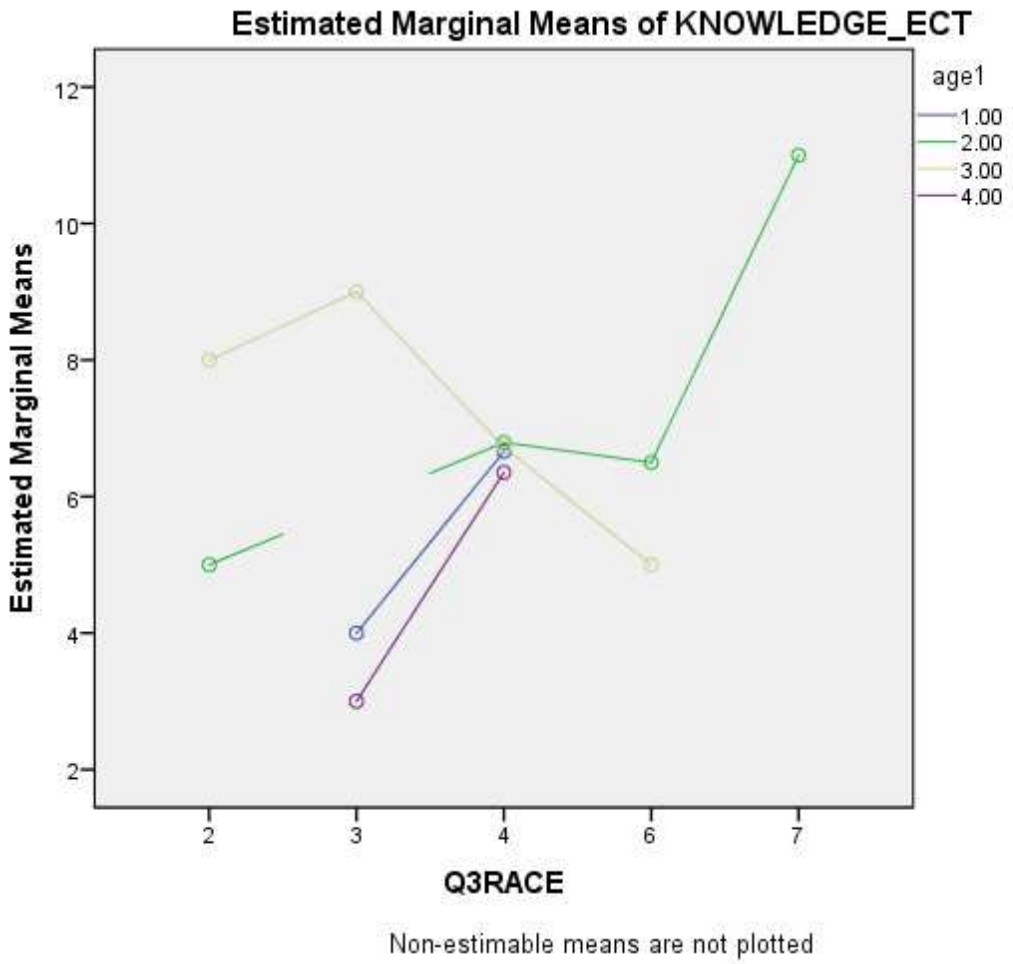

Figure 6: The Interaction Effect between Age and Gender on Knowledge

One-way ANOVA

A one-way analysis of variance (ANOVA) was performed to test the difference between the independent variable (colleges) and the dependent variable (stigma). The null hypothesis is as followed:

HΦIV: There is no difference between university students' across colleges and their self-reported stigma toward persons with schizophrenia.

A one-way ANOVA is utilized when an independent variable has two or more levels. Students were classified into three groups: health (n = 131), education (n = 99), and business (n = 66). The college of education had the highest stigma scores (M = 121, SD = 19.6), followed by the college of business (M = 118, SD = 25), and lastly the college of health affairs (M = 114, SD = 24.4). However, the difference among the three college was not statistically significant, F (2, 1132) = 2.10, p = < .05. As a result, the data failed to reject the null hypothesis. Table 16 presents the summary of the one-way ANOVA performed.

Table 16

Summary of ANOVA

	Sum of Squares	df	Mean Square	p
Between Groups	2265.11	2	1132.55	.12
Within Groups	157858.87	293	538.76	
Total	160123.98	295		

In addition, to test the difference between the independent variable (college) and the dependent variable (knowledge), a one-way ANOVA was also performed. The null hypothesis is as followed:

HΦV: There is no difference between university students' across colleges and their knowledge regarding persons with schizophrenia.

Students were classified into three groups: health affairs (n = 131), education (n = 99), and business (n = 66). The college of education had the highest knowledge scores (M = 7.03, SD = 2.34), followed by the college of business (M = 6.48, SD = 2.4), and lastly the college of health (M = 6.35, SD = 2.6). However there were no differences among the three colleges, indicating it was not statistically significant, F (2, 13.6) = 2.24, p = < .05. Therefore, the data failed to reject null hypothesis. Table 17 includes a summary of the one-way ANOVA performed.

Table 17

Summary of ANOVA

	Sum of Squares	df	Mean Square	p
Between Groups	27.29	2	13.65	.10
Within Groups	1785.24	293	6.09	
Total	1812.54	295		

CHAPTER V

DISCUSSION

Schizophrenia is the most severely debilitating and least understood form of mental illness in the world (Ahmed et al., 2018; Awad et al., 2016; Evensen et al., 2016; Joshi et al., 2018; Lefort- Besnard et al., 2018). Data from the National Institute of Mental Health (2018) showed nearly 1.0% of people in the U.S. are living with schizophrenia and schizophrenia affects nearly 21 million individuals worldwide (World Health Organization, 2016). While research shows stigma toward some mental illnesses has declined over the years (e.g., Corrigan, 2016; Koike et al., 2018), stigma, discrimination, and violation of the human rights of persons with schizophrenia (PWS) remains common (Paul, 2018; WHO, 2016).

Studies have shown limited knowledge regarding mental illness may contribute to negative attitudes toward persons with serious mental illness (SMI) (Mascayano et al., 2016; Sideras et al., 2015). As such, studies examining attitudes and knowledge toward SMI, especially PWS, need to be conducted in order to better understand the myriad factors (e.g., age, gender, education, and cultural background) associated with negative attitudes toward PWS. There is also a need to examine attitudes and knowledge toward PWS among racial/ethnic minority groups such as Hispanics, especially since Hispanics tend to hold more stigmatized views toward SMI and tend to be less informed about schizophrenia than other racial/ethnic groups (Barrera et al., 2013; Caplan et al., 2016;

Jimenez et al., 2013; Kopelowicz et al., 2015; Loch et al., 2013; Mascayano et al., 2016). In addition, stigma toward SMI has been extensively researched in university settings among students from mental health-related fields (Hackler et al., 2016; Link, Wells et al., 2015; Peer, et al., 2015; Webb et al., 2016). However, because non-mental health-related professionals are also likely to come into contact with PWS and other types of SMI, researchers (e.g., Pingani et al., 2015; West et al., 2014) have recommended *all* university students and professionals across fields (mental health and non-mental health) receive updated and ongoing information about SMI in order to improve the quality of care and full inclusion of individuals with SMI.

The purpose of the present study was to ascertain whether a relationship existed between university students' knowledge regarding schizophrenia and their self-reported level of stigma toward PWS. Because one of the many assumptions regarding attitudinal surveys is individuals may be unwilling to provide accurate and honest answers, a social desirability measure designed to assess whether students were attempting to respond in a favorable manner was also utilized. The study further investigated whether differences existed between university students' age, gender, race/ethnicity, and college (i.e., College of Health Affairs, College of Education, and College of Business), and their level of stigma and knowledge regarding schizophrenia.

The research hypotheses were tested by surveying 296 predominantly Hispanic undergraduate students attending a university located on the U.S.-Mexico border. The survey included students' demographic information (e.g., age, gender, race/ethnicity, college of current enrollment, and familiarity with PWS) and three pre-existing survey instruments (1) a stigma toward PWS scale, (2) a measure of knowledge regarding PWS,

and (3) a scale to assess whether student responses were socially biased. The research hypotheses were tested utilizing different statistical analyses, including, independent student *t*-tests, Pearson Product moment correlations, and analysis of variance (ANOVA). The survey instruments and demographic information are located in Appendix D.

Conclusions

The findings of this study echo similar studies (e.g., Barrera et al., 2013) that suggest Hispanics residing along the U.S.-Mexico border may have different perceptions about mental illness than individuals (including Hispanics) from other parts of the U.S. Specifically, the present study showed a small, positive correlation between students' knowledge regarding schizophrenia and their self-reported level of stigma toward PWS in that low levels of knowledge regarding schizophrenia were indicative of high levels of stigma toward PWS. While the the correlation between knowledge regarding schizophrenia and self-reported stigma levels was not significant, a number of interesting finding are discussed below.

Stigma and Knowledge toward PWS

A number of students reported they believed PWS are hospitalized four or more times in a given year when, in fact, research suggests individuals with SMI, including PWS, are likely to experience only two or more hospitalizations in a given year and these hospitalizations are usually due to (1) increased risk of health-related issues such as cardiovascular disease and high suicide rates (Azevedo et al., 2014; Kessler et al., 2017), (2) stigma such as PWS are inherently dangerous (Durand-Zaleski et al., 2013; Mascayano et al., 2016; Perez-Garin & Molero, 2016), and (3) low treatment adherence, including missed medications, missed doctor's appointments, and lack of interest in

receiving psychological services which increases symptoms severity and relapse (Pilon et al., 2017). Because knowledge regarding SMI has consistently been shown to correlate with stigma toward SMI, the students' lack of knowledge regarding the number of hospitalizations suggested they may have had higher stigmatizing views toward PWS than students who did not believe PWS were hospitalized four or more times a year. In fact, researchers (e.g., Durand-Zaleski et al.; Mascayano et al.; Perez-Garin & Molero) have consistently maintained schizophrenia is the most frequently stigmatized disorder of all mental illnesses and that limited knowledge about PWS is highly correlated with stigma toward PWS.

In line with students' misconceptions regarding hospitalizations among PWS, aaproximately a third of the students (including those from health-related disciplines) endorsed the statement, "PWS benefit the least from services like psychotherapy," as compared to students who believed psychotherapy is beneficial for PWS. The students' response regarding the lack of perceived benefits of psychotherapy suggest they did not believe PWS are likely to have successful treatment outcomes and, if students do not believe PWS can benefit from psychotherapeutic treatment, they may be inclined to provide less than optimal psychotherapeutic services for PWS. As such, PWS who are already disinclined to pursue psychotherapeutic treatment may become even less likely to seek help for their psychiatric condition if they believe mental health professionals hold stigmatizing views about their potential for treatment success.

The findings of the present study did not yield significant racial/ethnic differences regarding their self-reported stigma and knowledge about PWS. However, it may be these students hold attitudes toward PWS similar to individuals who reside in Mexico or

other Latin countries as opposed to the rest of the U.S. It is likely students' attitudes about PWS were influenced by their cultural heritage as traditional Hispanic families who reside near the U.S.-Mexico border often hold different views about mental illness than the "dominant" culture. That is, although students were enrolled in higher education, their attitudes may have been influenced by their parents' and grandparents' traditional views about SMI and PWS. As noted by Barrera et al. (2013) who examined perceptions regarding mental illness among Mexican-Americans residing on the U.S.-Mexico border, "…participants living along the U.S./Mexico border may not feel the need to be 'adopted' by the dominant group since they are part of the dominant group and their behaviors and values are the social norm" (p. 241).

Another interesting finding was some students reported a belief that PWS could be trained as a medical doctor. Conversely, when queried about PWS' capabilities, some students endorsed a statement that school counselors should recommend PWS participate in a job training program. This would suggest while some students have high career expectations for PWS, others maintain PWS would fare better in special education-type programs than in the regular classroom. However, many PWS are high functioning and are able to hold professional jobs that include consultants, manager, and sales designers (Buhariwala, Wilton, & Evans, 2015; Morrow, Wasik, Cohen, & Perry, 2009). Such evidence suggests some of the students were oriented toward exclusion rather than inclusion of PWS with other people who are afforded the opportunity to receive regular education.

When students were asked if they would require Harry (a fictitious man with schizophrenia) to take his medications if they were in charge of his treatment, the

majority of students indicated they would require Harry to take his medications. When asked whether Harry should be forced into treatment with his doctor against Harry's will, the majority of students indicated they would want Harry to be forced into treatment. These responses suggest most of the students believed it was acceptable to force Harry into receiving treatment and to take medications, both of which are commonly held attitudes about treatment among PWS (Del Olmo-Romero et al., 2018). Several students' responses also reflected feelings of pity toward PWS. For example, when asked how much sympathy they felt for Harry, the majority of students indicated they were highly sympathetic toward Harry. Previous findings have suggested PWS elicit high levels of pity (a stigma) from other people (Corrigan et al., Del Olmo-Romero et al.), which parallel the results for this question.

Several students (i.e., College of Business) indicated (via written responses at the end of the survey) that due to their limited knowledge about PWS, they experienced difficulty responding to the survey questions. As such, the lack of statistical significance found in the present study between stigma toward PWS and knowledge regarding PWS makes sense in that if one has limited knowledge about PWS, they may also have less stigma toward PWS because their attitudes regarding PWS are unlikely to have been tainted. The results of the present study also indicated non-significant differences among students with regard to college of attendance (i.e., health-affairs, education, and business) toward PWS. However, students' written responses were analyzed across all college majors (e.g., rehabilitation services and counseling, social work, business, economics, and early care and early childhood) and some of the students majoring in rehabilitation services and counseling reported increased knowledge about PWS as they took

coursework in abnormal psychology. Therefore, as expected, a number of students from a health-related field (e.g., rehabilitation services and counseling) reported higher knowledge about PWS than students from non health-related discipliens. This suggests coursework in psychology and related mental health fields are likely to have included information about schizophreniaand and related SMI and was reflected in the rehabilitation and counseling students' responses regarding PWS. As such, the inclusion of courses regarding PWS could help to enhance knowledge and mitigate stigma toward PWS.

Implications of the Findings

This study has offered direct information from university students enrolled at an Hispanic-serving institution regarding the association between knowledge about schizophrenia and self-reported stigma toward PWS. For example, after reviewing individual surveys, it seemed students gained knowledge about PWS through multiple resources, including direct contact with PWS, the media, and formal coursework. For example, the majority of the students reported sources of knowledge about PWS from at least two resources (e.g., formal coursework and Internet or movies and self-directed readings). This suggests interventions can be designed to enhance students' knowledge about SMI (notably schizophrenia) by incorporating students' current sources of knowledge (e.g., media and formal coursework) with formal coursework (e.g., abnormal psychology and psychosocial aspects of disability) in order to reduce stigma among university students toward PWS.

Additionally, findings from this study suggest students who reported sources of knowledge about schizophrenia through multiple resources (e.g., Internet, self-directed

readings, and movies) could enhance their knowledge by receiving trainings/workshops that provide exclusive information about schizophrenia. Such evidence confirms previous research findings that knowledge about PWS is significantly correlated with stigma toward PWS (Jensen et al., 2017; Mora, 2017; Purba et al., 2017; Ozer et al., 2017). As such, efforts designed specifically to provide instruction (e.g., psychoeducation, formal coursework, and contact-based experiences with PWS) for *all* university students is likely to lessen stigmatizing attitudes toward PWS.

Overall, based on the outcomes of this study, it appears students residing close to U.S.-Mexico border would benefit from interventions that address (a) college courses designed to increase awareness about SMI, including schizophrenia (b) contact-based, experiential activities relating to SMI, (c) information regarding the influences of culture on perceptions toward SMI, and (d) studies that include both quantitative and qualitative measures to increase the likelihood of fully ascertaining student/participant responses as they relate to SMI, notably schizophrenia. The quantitative measure should also be normed among Mexican-Americans as opposed to Hispanics in general.

Limitations

Despite of several advantages associated with the present study, there are several limitations. First, undergraduate students were recruited from an Hispanic-serving university located on the U.S.-Mexico border and was comprised primarily of Hispanic students. Therefore, generalizability to other racial/ethnic groups as well as other undergraduate and graduate student populations cannot be made. The second limitation in the study was gender distribution. For example, female participants were proportionally larger in numbers as compared to male participants. However, the

majority of the sample was drawn from two colleges (i.e., College of Health and College of Education), which are both comprised of more females than males, therefore; gender bias could not be avoided. A third limitation was the utilization of self-report measures to examine students' attitudes toward PWS. One of the many assumptions that underlies the use of attitudinal surveys is that individuals may be unwilling to provide accurate and honest answers, a phenomenon known as social desirability or "faking good." However, the Marlowe-Crowne Social Desirability Scale-Short form (Reynolds, 1982) was used to minimize socially desirable responding.

Suggestions for Future Research

Results from this study provide several avenues for future studies. First, since the study was limited to a specific area located on the Texas-Mexico border, the results may be indicative of the local culture of the area. Thus, a similar study organized on a large scale that includes different geographical locations might help to identify other influences on Hispanic students' attitudes and knowledge toward PWS. Considering the geographical location selected for the present study, the development of culturally informed instruments should be one of the primary focuses for future research. Such instruments will aid in capturing more accurate conceptualizations of the perceptions toward PWS. Second, due to the limited knowledge regarding schizophrenia, students from all colleges and across all majors should receive mental-health training at the onset of their programs in order to reduce negative attitudes toward persons with schizophrenia. Researchers and future professionals (counselors, social-workers, and educators) must also be prepared to advocate for practical interventions designed to enhance the quality of life among PWS residing near the U.S.- Mexico border, with consideration of cultural

beliefs and values. A mixed methods approach that captures quantifiable responses as well as an understanding of the underlying reasons, opinions, and motivations regarding PWS would enrich our understanding of the relationship between knowledge and stigma toward PWS. Indeed, more research regarding attitudes toward PWS is needed if we hope to facilitate compassion and successful treatment of the most severely debilitating, least understood, and most highly stigmatized form of serious mental illness in the world.

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APPENDIX A

APPENDIX A

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

Please circle A or B for the following questions	**A**	**B**
1. One type of psychotherapy, cognitive-behavioral therapy, has been shown to reduce the psychotic symptoms of schizophrenia.	True	False
2. Considering people with schizophrenia, what is the average number of separate hospitalizations for their mental illness over a one-year period of time?	4 or more	2 or less
3. People with severe mental illness cannot maintain private residences.	True	False
4. People with schizophrenia should be allowed to use an online dating service.	True	False
5. People with schizophrenia make up what percent of the homeless population?	5%	25%
6. Adolescents with schizophrenia are frequently truant from school.	True	False
7. People with severe mental illness are capable of establishing an intimate long-term relationship of a sexual nature.	True	False
8. People with schizophrenia benefit the least from services like psychotherapy.	True	False
9. People with schizophrenia are likely to steal from their family members.	True	False
10. Based on the capabilities of people with schizophrenia, school counselors should recommend beginning a job-training program rather than continuing in the regular curriculum.	True	False
11. For those with serious mental illness, what percent of treatment should be dedicated to medication compliance?	Greater than 80%	Less than 50%
12. Neglectful parenting is somewhat responsible for the beginning of a serious mental illness.	True	False

13. A person with schizophrenia is capable of being a physician or medical doctor.	True	False
14. The divorce rate among the general population is about 50%. What is the divorce rate among people who experience mental illness?	Greater than 70%	Less than 50%

APPENDIX B

APPENDIX B

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

ANSWER EACH OF THE FOLLOWING QUESTIONS ABOUT HARRY.

	Not at all								Very Much
1. I would feel aggravated by Harry	1	2	3	4	5	6	7	8	9
2. I would feel unsafe around Harry.	1	2	3	4	5	6	7	8	9
3. Harry would terrify me.	1	2	3	4	5	6	7	8	9
4. How angry would you feel at Harry?	1	2	3	4	5	6	7	8	9
5. If I were in charge of Harry's treatment, I would require him to take his medication.	1	2	3	4	5	6	7	8	9
6. I think Harry poses a risk to his neighbors unless he is hospitalized.	1	2	3	4	5	6	7	8	9
7. If I were an employer, I would interview Harry for a job.	1	2	3	4	5	6	7	8	9
8. I would be willing to talk to Harry about his problems.	1	2	3	4	5	6	7	8	9
9. I would feel pity for Harry.	1	2	3	4	5	6	7	8	9
10. I would think that it was Harry's own fault that he is in the present condition.	1	2	3	4	5	6	7	8	9
11. How controllable, do you think, is the cause of Harry's present condition?	1	2	3	4	5	6	7	8	9
12. How irritated would you feel by Harry?	1	2	3	4	5	6	7	8	9
13. How dangerous would you feel Harry is?	1	2	3	4	5	6	7	8	9
14. How much do you agree that Harry should be forced into treatment with his doctor even if he does not want to?	1	2	3	4	5	6	7	8	9
15. I think it would be best for Harry's community if he were put away in a psychiatric hospital.	1	2	3	4	5	6	7	8	9

	Not at all								Very Much
16. I would share a car pool with Harry every day.	1	2	3	4	5	6	7	8	9
17. How much do you think an asylum, where Harry can be kept away from his neighbors, is the best place for him?	1	2	3	4	5	6	7	8	9
18. I would feel threatened by Harry.	1	2	3	4	5	6	7	8	9
19. How scared of Harry would you feel?	1	3	3	4	5	6	7	8	9
20. How likely is it that you would help Harry?	1	2	3	4	5	6	7	8	9
21. How certain would you feel that you would help Harry?	1	2	3	4	5	6	7	8	9
22. How much sympathy would you feel for Harry?	1	2	3	4	5	6	7	8	9
23. How responsible, do you think, is Harry for his present condition?	1	2	3	4	5	6	7	8	9
24. How frightened of Harry would you feel?	1	2	3	4	5	6	7	8	9
25. If I were in charge of Harry's treatment, I would force him to live in a group home.	1	2	3	4	5	6	7	8	9
26. If I were a landlord, I probably would rent an apartment to Harry.	1	2	3	4	5	6	7	8	9
27. How much concern would you feel for Harry?	1	2	3	4	5	6	7	8	9

APPENDIX C

Appendix C

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

Items	True	False
1. It is sometimes hard for me to go on with my work if I am not encouraged.		
2. I sometimes feel resentful when I don't get my own way.		
3. On few occasions, I have given up doing sometimes because I thought too little of my ability.		
4. There have been times when I felt like rebelling against people in authority even though I knew they were right.		
5. No matter who I'm talking to, I'm always a good listener.		
6. There have been occasions when I took advantage of someone.		
7. I am always willing to admit it when I make a mistake.		
8. I sometimes try to get even, rather than forgive and forget.		
9. I am always courteous, even to people who are disagreeable.		
10. I have never been irked when people expressed ideas very different from my own.		
11. There have been few times when I was quite jealous of the good fortune of others.		
12. I am sometimes irritated by people who ask favours of me.		
13. I have deliberately said something that hurt someone's feelings.		

APPENDIX D

APPENDIX D

SCHIZOPHRENIA SURVEY

Your completion of this survey is very important. The information collected in this study is expected to increase knowledge regarding schizophrenia and to provide useful information for researchers, educators, counselors, and medical practitioners to enhance the quality of life for persons with schizophrenia.

The information gathered from this survey is confidential. The data will be encrypted and stored in a locked file cabinet and only the researchers will have access to the information. Your participation is voluntary. Completion of this survey indicates you have given your consent to participate.

You may also choose to enter a drawing in which one will be selected to each receive a $75 Amazon gift card. If you wish to participate in the drawing for a $75 Amazon gift card, please write your e-mail address on the bottom of this page.

The survey will take approximately 15-20 minutes to complete.

If you are willing to participate in this study, please do the following:

1. Read and sign the consent form.
2. Complete the survey.
3. **Return the consent form and the completed survey** to the research assistant.

Demographic Questionnaire

Dear Student:

Thank you for agreeing to participate in this study. We want to collect some basic information about you in this short survey and would appreciate it if you could answer these questions to the best of your knowledge.

Please place an *"X"* next to your response OR *write* your response on the line provided.

1. **Your age:** _____

2. **Your gender:** ❑ Male ❑ Female ❑ Other (please specify): _____

3. **With which race/ethnicity do you most identify?**

   ❑ American Indian/Alaska Native ❑ Asian ❑ Black/African

   ❑ Hispanic/Latino ❑ Native Hawaiian/Pacific Islander ❑ White (non-Hispanic)

   ❑ Other (*please specify*): _____

4. **Please indicate your college major from <u>one</u> of the three colleges listed below:**

   College of Health Affairs

   ❑ Biomedical Sciences ❑ Communication Sciences & Disorders ❑ Dietetics

   ❑ Health & Human Performance ❑ Kinesiology ❑ Physical Therapy

   ❑ Occupational Therapy ❑ Rehabilitation Services and Counseling ❑ Social Work

   ❑ Pharmacy ❑ Nursing

   College of Education and P-16 Integration

   ❑ Early Care & Early Childhood ❑ Bilingual Education Specialization for Elementary Education

   ❑ Early Childhood Specialization for Elementary Education ❑ Elementary Education

   ❑ English as a Second Language (ESL) Specialization for Elementary Education

   ❑ Life Sciences ❑ Middle School Mathematics

❑ Special Education Specialization for Elementary Education

Robert C. Vackar College of Business and Entrepreneurship

❑ Accounting ❑ Business ❑ Entrepreneurship & Innovation ❑ Finance

❑ Economics ❑ Information Systems ❑ International Business

❑ Management ❑ Marketing ❑ Materials Management & Logistics

5. **Do you know a person with schizophrenia?**

❑ Yes ❑ No

If you answered "Yes" to question 5 (above), please identify your relationship with that person (select all that apply):

❑ Parent ❑ Spouse/Partner ❑ Brother/Sister ❑ Friend ❑Work-Related

❑ Other (please specify):

_____

If you answered "Yes" to question 5 (above), how long you have known a person who has schizophrenia?

❑ Less than 1 year ❑ 1-5 years ❑ 6-10 years ❑ 11-15 years ❑ More than 15 years

6. **How frequently have you interacted with persons with schizophrenia?**

❑ Never ❑ 1-2 interactions ❑ 3-4 interactions ❑ 5-10 interactions ❑ I interact regularly

7. **Have you taken a course such as abnormal psychology that covered content about schizophrenia?**

❑ Yes ❑ No

8. **My knowledge of schizophrenia is_____:**

❑ No knowledge ❑ Minimal Knowledge ❑ Moderate Knowledge ❑ High Knowledge

9. **I have obtained my knowledge about schizophrenia through (please check all that apply):**

❑ Formal coursework ❑ Internet video such as You Tube ❑ Self-directed readings

❑ Movies ❑ Workshops/conferences ❑ Other (please specify):_____

Scale I: This is a test of your knowledge about mental illness. The questions on the test are taken from findings of scientific research. You are not expected to have read the research reports, but by using your experience and general knowledge you should be able to pick the correct answer. Some people will do much better than others because of their experience or because of their training in medicine, rehabilitation, or psychology. Read each question carefully and select the response that you consider to be the correct answer. THERE IS NO PENALTY FOR GUESSING. There is no time limit for the completion of this test, but you should work as rapidly as you can.

Please circle A or B for the following questions	**A**	**B**
1. One type of psychotherapy, cognitive-behavioral therapy, has been shown to reduce the psychotic symptoms of schizophrenia.	True	False
2. Considering people with schizophrenia, what is the average number of separate hospitalizations for their mental illness over a one-year period of time?	4 or more	2 or less
3. People with severe mental illness cannot maintain private residences.	True	False
4. People with schizophrenia should be allowed to use an online dating service.	True	False
5. People with schizophrenia make up what percent of the homeless population?	5%	25%
6. Adolescents with schizophrenia are frequently truant from school.	True	False
7. People with severe mental illness are capable of establishing an intimate long-term relationship of a sexual nature.	True	False
8. People with schizophrenia benefit the least from services like psychotherapy.	True	False
9. People with schizophrenia are likely to steal from their family members.	True	False
10. Based on the capabilities of people with schizophrenia, school counselors should recommend beginning a job-training program rather than continuing in the regular curriculum.	True	False

11. For those with serious mental illness, what percent of treatment should be dedicated to medication compliance?	Greater than 80%	Less than 50%
12. Neglectful parenting is somewhat responsible for the beginning of a serious mental illness.	True	False
13. A person with schizophrenia is capable of being a physician or medical doctor.	True	False
14. The divorce rate among the general population is about 50%. What is the divorce rate among people who experience mental illness?	Greater than 70%	Less than 50%

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

ANSWER EACH OF THE FOLLOWING QUESTIONS ABOUT HARRY.

	Not at all								Very Much
1. I would feel aggravated by Harry	1	2	3	4	5	6	7	8	9
2. I would feel unsafe around Harry.	1	2	3	4	5	6	7	8	9
3. Harry would terrify me.	1	2	3	4	5	6	7	8	9
4. How angry would you feel at Harry?	1	2	3	4	5	6	7	8	9
5. If I were in charge of Harry's treatment, I would require him to take his medication.	1	2	3	4	5	6	7	8	9
6. I think Harry poses a risk to his neighbors unless he is hospitalized.	1	2	3	4	5	6	7	8	9
7. If I were an employer, I would interview Harry for a job.	1	2	3	4	5	6	7	8	9
8. I would be willing to talk to Harry about his problems.	1	2	3	4	5	6	7	8	9
9. I would feel pity for Harry.	1	2	3	4	5	6	7	8	9
10. I would think that it was Harry's own fault that he is in the present condition.	1	2	3	4	5	6	7	8	9
11. How controllable, do you think, is the cause of Harry's present condition?	1	2	3	4	5	6	7	8	9
12. How irritated would you feel by Harry?	1	2	3	4	5	6	7	8	9
13. How dangerous would you feel Harry is?	1	2	3	4	5	6	7	8	9
14. How much do you agree that Harry should be forced into treatment with his doctor even if he does not want to?	1	2	3	4	5	6	7	8	9
15. I think it would be best for Harry's community if he were put away in a psychiatric hospital.	1	2	3	4	5	6	7	8	9

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

ANSWER EACH OF THE FOLLOWING QUESTIONS ABOUT HARRY.

	Not at all								Very Much
16. I would share a car pool with Harry every day.	1	2	3	4	5	6	7	8	9
17. How much do you think an asylum, where Harry can be kept away from his neighbors, is the best place for him?	1	2	3	4	5	6	7	8	9
18. I would feel threatened by Harry.	1	2	3	4	5	6	7	8	9
19. How scared of Harry would you feel?	1	3	3	4	5	6	7	8	9
20. How likely is it that you would help Harry?	1	2	3	4	5	6	7	8	9
21. How certain would you feel that you would help Harry?	1	2	3	4	5	6	7	8	9
22. How much sympathy would you feel for Harry?	1	2	3	4	5	6	7	8	9
23. How responsible, do you think, is Harry for his present condition?	1	2	3	4	5	6	7	8	9
24. How frightened of Harry would you feel?	1	2	3	4	5	6	7	8	9
25. If I were in charge of Harry's treatment, I would force him to live in a group home.	1	2	3	4	5	6	7	8	9
26. If I were a landlord, I probably would rent an apartment to Harry.	1	2	3	4	5	6	7	8	9
27. How much concern would you feel for Harry?	1	2	3	4	5	6	7	8	9

SCALE III: Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

Items	True	False
1. It is sometimes hard for me to go on with my work if I am not encouraged.		
2. I sometimes feel resentful when I don't get my own way.		
3. On few occasions, I have given up doing sometimes because I thought too little of my ability.		
4. There have been times when I felt like rebelling against people in authority even though I knew they were right.		
5. No matter who I'm talking to, I'm always a good listener.		
6. There have been occasions when I took advantage of someone.		
7. I am always willing to admit it when I make a mistake.		
8. I sometimes try to get even, rather than forgive and forget.		
9. I am always courteous, even to people who are disagreeable.		
10. I have never been irked when people expressed ideas very different from my own.		
11. There have been few times when I was quite jealous of the good fortune of others.		
12. I am sometimes irritated by people who ask favors of me.		
13. I have deliberately said something that hurt someone's feelings.		

PLEASE PROVIDE ADDITIONAL COMMENTS (*if any*):

_____

_____

_____

THANK YOU FOR YOUR PARTICIPATION

BIOGRAPHICAL SKETCH

Manisha Sharma earned her Bachelor's degree in Rehabilitation Science from Guru Gobind Singh Indraprastha University from New Delhi, INDIA, her Master's degree in Psychology from Ambedkar University, New Delhi, INDIA and her Doctor of Philosophy in Rehabilitation Counseling from The University of Texas Rio Grande Valley (UTRGV) in May 2017. Manisha has previously worked as a rehabilitation therapist providing holistic therapy to children with special needs at Sahan Special School, New Delhi, INDIA. In addition she has worked as a counselor intern at the UTRGV student and community counselor centers, and taught undergraduate level courses during her doctoral program at UTRGV.

Manisha is actively associated with several organizations at national levels. She was awarded with *Aswini Sapra Memorial Trophy* for the best student during her Bachelor's degree (2014-2018). Her permanent mailing address is 2990 Bissonett Street, Apt 9108, Houston, TX 77005 and she may be reached via email at manisha.8513@gmail.com