Persecutory Delusions and Suicide in Schizophrenia

Kelsey Clews

A Dissertation Submitted to the Faculty of

The Chicago School of Professional Psychology

In Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy in Psychology

June, 2014

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Abstract

Suicide is a tragic, complex phenomenon experienced by individuals of all ages, genders, and cultures. Given its widespread occurrence, it is important to identify predictive and risk factors in order to develop efficacious prevention and intervention strategies. One factor that has been consistently identified as increasing risk for suicide is being diagnosed with schizophrenia. Persecutory delusions have been most prominently researched in relation to outcome in schizophrenia; however, few studies have investigated the relationship between persecutory delusions and suicide risk for those with this diagnosis. Furthermore, studies that have been conducted are largely quantitative in nature, and therefore are limited by their ability to offer explanations for their results. Understanding quantitative relationships through a theoretical perspective focused on choice and meaning making, such as existential psychology, may increase the specificity and effectiveness of preventative programs and intervention approaches, ultimately leading to more saved lives. This dissertation therefore used archival data from participants in the Chicago Follow-Up Study diagnosed with schizophrenia or schizoaffective disorder to explore the relationship between the course of suicidality and persecutory delusions in schizophrenia through an existential lens. Locus of control and self-esteem were included in the analysis as possible mediating variables. Those with high self-esteem endorsed higher suicidal activity, and those with persecutory delusions endorsed higher suicidal activity and a more external locus of control. Implications of these results suggest both self-esteem and locus of control should be addressed as possible mediating factors in the relationship between persecutory delusions and suicide for those diagnosed with schizophrenia.

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Chapter 1: Introduction to the Study

Background

Suicide is a tragic, complex phenomenon experienced globally by individuals of all ages, genders and cultures. The most recent suicide facts sheet released by the Center for Disease Control and Prevention (CDC; 2012b) in 2010 reported suicide rates were four times higher for males than for females, was the third leading cause of death among persons aged 15-24 years, the second among persons aged 25-34 years, the fourth among person aged 35-54 years, and the eighth among persons 55-64 years. Non-Hispanic Whites and American Indian/ Alaskan Natives had the highest rates of suicide in all age groups (CDC, 2012b). The World Health Organization (WHO) collected similar data from countries in Africa, the Americas, the Eastern Mediterranean region, Europe, South-East Asia and the Western Pacific region; however, the date of the most recently included statistics varies greatly, from1981-2010 (WHO, 2012), and therefore makes comparing suicide rates between these countries difficult.

Challenges of Studying Suicide

Given its widespread occurrence, it is important to identify predictive and risk factors in order to develop efficacious prevention and intervention strategies. However, doing so has proven to be a difficult task for several reasons. First, the relationship between these factors and suicide varies depending on personal variables such as those mentioned above (age, gender, cultural background/ ethnicity) as well as mental health (Agerbo, Nordentof, & Mortensen 2002; Canetto, 2008; Harwood, Hawton, Hope, & Jacoby, 2001; Kaplan, Harrow, & Faull, 2012; Kaslow, Price, Wyckoff, Grall, Sherry, &Young, 2004; Quin, Agerbo, & Mortensen, 2003). Another challenge facing suicide research is the unclear definition of "suicidal behavior," specifically between suicide attempts (self-injury with the intent to die) and suicidal gestures

(parasuicide or deliberate self-harm without the intent to die but to communicate distress; Nock & Kessler, 2006) as well as the lack of differentiation between warning signs and risk factors (Rudd et al., 2006).

Studying suicide is further complicated by the fact that much of the available data on risk and predictive factors and warning signs of suicide are retrospective in nature, relying upon comparisons between prior mental health reports, third party opinions, national records, and reports of suicide prevalence. The problem with this method is that intent and reasoning behind the behavior can often only be speculated (Harwood et al., 2001; Qin et al., 2003; Qin & Nordentoft, 2005).

Some prospective studies have identified risk factors based on responses to structured clinical assessments such as the Structured Clinical Interview for DSM-IV (SCID-IV; Melle et al., 2006), the Positive and Negative Syndromes Scale (PANSS; Gupta, Black, Arndt, Hubbard, & Andreason, 1998; Mitter, Subramaniam, Abdin, Yin Poon, & Verma, 2013), the Beck Suicidal Intent Scales (SIS; Hariss & Hawton, 2005) and the Schizophrenia Suicide Risk Scale (Pompili et al., 2009).Although the intent of such behavior can be identified through these methods, suicide is still a relatively rare occurrence, and therefore low numbers of completed suicides often makes it difficult to find statistically significant relationships between factors (Hawton, Sutton, Haw, Sinclair, & Deeks, 2005; Kaplan et al., 2012; Qin et al., 2003). Therefore, despite researchers' aims to better identify specific long-term and immediate precipitating factors related to suicidal ideation, suicide attempts, and suicide, predicting and preventing suicide still remains a difficult task.

Suicide and Psychological Disorders

Despite these challenges, one factor that has been consistently identified as increasing risk for suicide across cultures and ages is being diagnosed with a psychiatric disorder. Studies have suggested the heightened prevalence of suicide among individuals diagnosed with a psychiatric disorder in comparison to those who have not been diagnosed (Clark, Young, Scheftner, Fawcett, & Fogg, 1987; Mann, Waternaux, Haas, & Malone, 1999; Rudd et al., 2006). There are, however, still few patients within each diagnostic category who actually commit suicide, and not all patients within each diagnostic category, including those most highly associated with suicide risk, become suicidal (Hendin, 1986; Kaplan & Harrow, 1996; Mann et al., 1999). Given discrepancies in prevalence between and within psychiatric populations, many studies have attempted to determine which diagnoses, and what factors within and across these diagnoses make certain individuals more at risk for suicide.

Suicide and schizophrenia. Individuals diagnosed with schizophrenia have been identified by some as being inherently more at risk for suicide than many other psychiatric diagnoses, second to depressive disorders (Brugnall, Novick, Haro, Rossi, & Bartolomasi, 2012; Pompili et al., 2007; Radomsky, Haas, Mann, & Sweeney, 1999). The lifetime rate of completed suicide among those diagnosed with schizophrenia is estimated to be approximately 10% (Fialko et al., 2006; Melle et. al., 2006), and suicide has been identified as the leading cause of preventable death among those with this diagnosis. The rate of suicide attempts has been found to be even higher within this diagnosis, ranging from 20-40% (Gupta et al., 1998; Havarky-Friedman et al., 1999). Factors that have been associated with increased risk for those with this diagnosis include poor social support and earlier onset (Kaplan et al., 2012; Radomsky et al.,1999), previous suicide attempts, higher education (Hawton et al., 2005), immediately

preceding hospitalization or immediately following discharge (Qin & Nordentoft, 2005), being male (Brugnoli et. al., 2012), acute or first-episode psychosis (Melle et al., 2006; Mitter et al., 2004) and experiencing co-morbid affective symptoms, particularly depression (Gupta et al., 1998; Havarkavy- Friedman et al., 1999; Hawton et al., 2005) and/or positive symptoms such as delusions and/or hallucinations (Brugnoli et. al., 2012; Fenton, McGlashan, Victor, & Blyler, 1997; Thong, Su, Chan, & Chia, 2008).

It is important to note, however, that much of the research conducted on risk factors, protective factors, and predictive factors of suicide for individuals diagnosed with schizophrenia has included individuals with a schizophrenia spectrum disorder, such as schizoaffective disorder, schizo-phreniform disorder, or schizo-typical personality disorder, or a mood disorder with psychotic features, such as major depressive disorder with psychotic features, rather than just schizophrenia. Given all of these disorders, except schizophrenia, require a disrupted affective component (depression, anxiety) as part of their criteria in the DSM-IV-TR and ICD-10, collapsing these diagnoses into one category of psychotic disorders may contribute to invalid assumptions and conclusions when identifying suicide risk factors and developing suicide intervention plans for those diagnosed with schizophrenia. Identifying specific suicide risk factors for individuals with schizophrenia may be further complicated by the interaction between risk factors that may also exist in other disorders, the potential for misdiagnosis and inaccurate assumptions regarding the projected effectiveness of preventative and intervention approaches specific to schizophrenia.

It is not surprising, therefore, that past studies have found inconsistent inter-rater reliability, as well as validity of certain diagnoses, particularly those with shared features (Angell, 2013; Frances & Widiger, 2012). However, with both the expansion and collapsing of

disorders, such as "schizophrenia spectrum disorders," and the inclusion of precursor disorders such as "psychosis risk syndrome" in the new DSM-5, it may be important to consider how such aforementioned inconsistencies may increase (Angell, 2011). Those with similar symptoms, such as delusions in those with schizophrenia and those with a major depressive disorder with psychotic features, may be more easily misdiagnosed and therefore misrepresented in research results.

Delusions and suicide in schizophrenia. Despite these concerns, delusions have been associated with outcome and prognosis of schizophrenia, schizoaffective disorder and mood disorders with psychotic features (Harrington, Langdon, Seigert, & McClure, 2005). According to the DSM-IV-TR and the ICD-10, delusions are not a necessary component of schizophrenia or any disorder with a psychotic component, nor are they specific to any of these disorders (American Psychiatric Association [APA], 2010). Therefore, citing delusions as related to suicide risk may indicate the presence of certain shared symptoms, rather than the disorders themselves, may contribute to the risk for suicide within, and across these diagnoses.

Following these concerns, the literature on the relationship between delusions and suicide risk in those diagnosed with schizophrenia varies greatly, with some studies identifying presence of delusions as related to increased risk (Fenton et al., 1997; Lippi, Smit, Jordaan, & Roos, 2009), and others finding only an increase in delusions related to increased risk (Mitter et al., 2013; Thong et al., 2008), specifically so for males (Kaplan et al., 2012). Some researchers suggest delusions are related to lower risk, and may have a protective potential against suicide (Hawton et al., 2005), while other have found no relationship between delusions and suicide (Failko et al., 2006; Mann et al., 1999). When differentiating between delusional types, persecutory delusions have been most prominently researched in relation to outcome in

schizophrenia (Harrington et al., 2005); however, few studies have investigated the relationship between persecutory delusions and suicide risk in those diagnosed with schizophrenia.

Persecutory delusions and suicide in schizophrenia. Given the minority of individuals in the general population diagnosed with schizophrenia, the relatively rare nature of suicide, and the specificity of persecutory delusions as a potential suicide risk factor for those with this diagnosis, it is not surprising few studies have tackled the task of defining the relationship between these experiences. However, this lacunae is an essential one to address, as the elevated suicide risk and prevalence for those with this diagnosis is still not well understood. Exploring persecutory delusions as a potentially mediating factor may increase the specificity and effectiveness of future preventative programs and intervention approaches, ultimately leading to more saved lives.

Combining Empirical Data and Theory

These challenges present major problems for both families and the mental health field, as identifying the most prominent risk factors, strongest predictors, and immediate warning signs is essential to developing and adopting prevention and intervention plans with the ultimate goal of saving lives. It is important to note that the methods many of these research studies use to explore relationships between suicide, schizophrenia, and delusions are limited in their ability to offer explanations for their findings (Failko et al., 2006). Although theoretical explorations of these experiences do not offer the empirically-based statistical relationships possible with such quantitative inquiry, they present perspectives through which researchers and clinicians may better understand the meaning of the relationships the quantitative studies identify. Studies that have used theoretical perspectives to better understand the experience of coping with psychosis and contemplating suicide shed light on potential reasoning behind behaviors, which may be

important when considering how to increase effectiveness of interventions (Keks & D'Souza, 2003; Kips, 2004; Unterrainer, 2014).

Existential Psychology, Suicide, and Schizophrenia

Given intention is both an important and difficult aspect to address in suicide research, it is possible further incorporation of theoretical perspectives focused on choice and meaning, such as existential psychology, may help determine the intent behind suicidal behavior, and increase the ability to differentiate between potentially life-threatening ideation/gestures and nonsuicidal self-harm. Also, because existential psychology emphasizes the importance of confronting unexpected life struggles, such as living with a psychiatric disorder, and uncontrollable, inevitable experiences such as death, incorporating principles from this theory may enable more comprehensive, valid explanations of suicide for a wide variety of individuals, and therefore lead to more reliable, effective prevention and intervention approaches.

Existential theory involves understanding how humans come to terms with the inescapable nature of death, suffering, and change (Binswanger, 1963; Gruba-McCallister & Levington, 1995; Heidegger, 1962; Spiegelberg, 1972). Part of this coming to terms with our human condition involves navigating the unpredictable, uncontrollable circumstances of life and attempting to make meaning of the world, our connection to others, and ourselves (Heidegger, 1962; Sartre, 1956). This essentially human struggle is that to which Sartre referred when he defined our "fundamental project," of committing to living out our lives as a process, rather than despairing (Jones, 2001).

Those considering suicide may actually be contemplating their ability to carry out this "project" meaningfully (Binswanger, 1963; Levington & Gruba-McCallister, 1993). The thought of suicide may present an opportunity to reclaim a sense of agency in a situation where someone

feels completely out of control; suicide is a final act of taking back control and ultimately choosing not to suffer. Working through such considerations may be particularly challenging for those with a disorganizing, isolating disorder such as schizophrenia.

Developing a delusion surrounding the source and cause of the chaotic, unpredictable, illogical experience of psychosis may be an attempt to make meaning out of their disrupted sense of reality (Jacobs, 1980; Jones, 2001; Spiegelberg, 1972). For example, in explaining Jasper's theory of delusion formation, Jacobs (1980) stated; "gross uncertainty drives him to instinctively look for some fixed point to which he can cling…the sudden consciousness of an idea, even though false, immediately has a soothing, strengthening, and euphoric effect" (pp. 556-557). Persecutory delusions, in particular, may allow individuals to avoid the responsibility and inadequacy they experience through this struggle by attributing the source of their disorientation to an outside force (Jacobs, 1980; Jones, 2001). However, whether these resolutions serve as protective factors against despairing, feeling hopeless to pursue our "fundamental project" and ultimately committing suicide has not been well-explored.

Locus of Control and Self-Esteem as Mediating Variables

The inconsistent relationships found between delusions and suicide in those with schizophrenia indicate particular mediating variables may produce a buffering effect when present. Both quantitative and theoretical studies have identified self-esteem and locus of control as factors related to general prognosis of those with schizophrenia (Freeman et al., 2012), suicide potential (Kaplan et al., 2012), development and impact of delusions on prognosis (Freeman et al., 2007; Jones & Fernyhough, 2008; Valiente et al., 2011) and response to treatments and interventions (Cutcliffe et al., 2012; Yip, 2004). Given existential psychological theories focus on individuals' abilities to accept their ultimate lack of control over their lives and confront

struggles without feeling like a failure and despairing, it follows that locus of control and self-esteem are implicated in the ultimate decision to take control over one's seemingly unbearable life by committing suicide.

Given the limitations in studying suicidal ideation and behaviors through a strict empirical framework, perhaps exploring these phenomena through a theoretical lens emphasizing "meaning-making" will provide a more comprehensive understanding. Similarly, studying individuals with altered experiences of reality, such as those diagnosed with schizophrenia and persecutory delusions, may lead to more sustainable treatment when considering such experiences existentially. Due to the higher prevalence of suicide among individuals with schizophrenia, and the prevalence of persecutory delusions among those with this diagnosis, exploring the connection that may exist between the meaning such individuals find in their lives and their behavioral expression of that endeavor may contribute to clarification of suicide risk within this population. To date there has been no research that compares empirical findings with existential perspectives of how suicidal behavior (suicidal self-directed violence, suicide attempt, other suicidal behavior, or suicide) relates to the presence and course of persecutory delusions in individuals with schizophrenia over time.

Purpose of the Study

The purpose of this dissertation was therefore to explore the relationship between the course of suicidality and persecutory delusions in individuals diagnosed with schizophrenia through an existential lens. Archival data from the Chicago Follow-Up Study (CFUS) was used. The CFUS IS a 25-year study of individuals diagnosed at initial hospitalization and re-assessed with various measures of functioning at 2 years, 4 and a half years, 7 and a half years, 10 years, 15 years, 20 years, and 25 years post initial hospitalization. Patients were diagnosed at initial

admission to the hospital using the Research Diagnostic Criterion (RDC; Spitzer, Endicott, & Robins, 1978), based on the Schedule for Affective Disorders and Schizophrenia (SADS; Endicott & Spitzer, 1978), and/or the Schizophrenia State Interview ESSII (Grinker & Harrow, 1987), a tape-recorded, semistructured interview, and admission interviews from the patients' charts. Inter-rater reliability for the diagnosis of schizophrenia was K = 0.88. The initial diagnosis was retained throughout each follow-up.

The SADS also categorized the type of the delusion and the severity (always, sometimes, never), and categorized suicidality into the presence or absence of ideation, attempts, or completions. A revised version of Rotter's Internal versus External Control of Reinforcement Scale (I.E. Scale; Rotter, 1966) was used to obtain measures of internal or external locus of control. The relation between scores on the full scale I.E. Scale and scores on the modified version that was used was assessed ($r=0.81$, $P<0.001$). Internal locus of control was defined as the person believes he or she can control his or her life. External locus of control was defined as the person believes his or her life decisions are controlled by external factors he or she cannot influence (Rotter, 1966). The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure self-esteem. The scale generally has high reliability: test-retest correlations are typically in the range of .82 to .88, and Cronbach's alpha for various samples are in the range of .77 to .88 (Kaplan et al., 2006). Existential perspectives from Kierkegaard, Sartre, Jaspers, Heidegger, and Binswanger on the underlying issues involved with persecutory delusions, schizophrenia, and suicide will be presented and used to better understand any associations, or lack thereof, that may be found between these aspects of experience.

Chapter 2: Literature Review

Suicide

As discussed previously, suicide occurs in all areas and cultures of the world. However, previously reported rates of suicide differ across demographics, such as age, gender, and ethnicity. It is widely accepted that males complete suicide more frequently than females, though females attempt more often than males (Hendin, 1986; Kaplan et al., 2012; Qin et al., 2003). The most recent suicide facts sheet released by the CDC (2012b) in 2010 reported suicide rates were four times higher for males than for females in the United States. Although this gender paradox is reported in many countries, one country in which this proportion is reversed is in China, where suicide is instead considered an act of admitting powerlessness or weakness (Canetto, 2008), and therefore more women attempt, and complete, than men.

The CDC (2012b) report also indicated suicide was the third leading cause of death among persons aged 15-24 years, the second among persons aged 25-34 years, the fourth among persons aged 35-54 years, and the eighth among persons aged 55-64 years. Several studies have also identified different risk factors for the elderly in comparison to younger adults, such as anankastic (obsessional) personality traits and cognitive decline related to dementia (Harwood et al., 2001; Zhang, McKeown, Hussey, Thompson, & Woods, 2005).

Ethnicity has been shown to contribute to differences in suicide prevalence and risk among populations. For example, the CDC identified Non-Hispanic Whites and American Indian/ Alaskan Natives as having the highest rates of suicide in all age groups (CDC, 2012b). However, Kaslow et al. (2004) identified a higher stigma surrounding suicidal behavior and misattribution of cause of death in African Americans as contributing to the frequently reported lower rates of suicide among that population. The WHO collected similar data from countries in

Africa, the Americas, the Eastern Mediterranean region, Europe, South-East Asia and the Western Pacific region; however, the date of the most recently included statistics varies greatly, from1981-2010 (WHO, 2012), and therefore makes comparing suicide rates between these countries difficult.

Challenges of Studying Suicide

Such differences in suicide rates present a fundamental challenge with studying suicide. Age, gender, and ethnicity represent several of many personal and cultural variables that may contribute to differences in suicide rates between individuals and populations. Other factors that have been considered include socioeconomic status, employment status, marital status, education, spirituality, family history of suicide, substance use, and physical health (Melle et al., 2006; Pompili et al., 2009; Thong et al., 2008). Therefore, what may be understood as a suicide risk for one individual, no less a population, may not be as potentially dangerous for others.

Another challenge with studying suicide is the varying ways suicidal behavior has been categorized. Depending on the categorization, the factors associated with increased risk for or predictive of, suicide may be more or less significant. Table 1 represents a list of terms and definitions recently deemed as acceptable or unacceptable to describe potential suicidal behaviors by the CDC (2011) in the publication *Self-directed Violence Surveillance: Uniform Definitions and Recommended Data Elements*.

Table 1

Acceptable Terminology

Term	Definition
Self-directed violence (analogous to self-injurious behaviors)	Behavior that is self-directed and deliberately results in injury or the potential injury to oneself. This does not include behaviors such as parachuting, gambling, substance abuse, or other risk-taking behaviors. Self-directed violence is categorized as non-suicidal or suicidal.
Non-suicidal self-directed violence	Behavior that is self-directed and deliberately results in injury or the potential for injury to oneself with no implicit or explicit evidence of suicidal intent.
Suicidal self-directed violence	Behavior that is self-directed and deliberately results in injury or the potential for injury to oneself with evidenced of implicit or explicit suicidal intent
Undetermined self-directed violence	Behavior that is self-directed and deliberately results in injury or the potential for injury to oneself. Suicidal intent is unclear based on the available evidence.
Suicide Attempt	A non-fatal self-directed potentially injurious behavior with any intent to die as a result of the behavior. Itmay or may not result in injury.
Interrupted self-directed violence by self	A person takes steps to injure self but is stopped by self prior to fatal injury
Interrupted self-directed violence by other	A person takes steps to injure self but is stopped by another person prior to fatal injury. The interruption can occur at any point during the act such as after the initial thought or after onset of behavior.
Other suicidal behavior including preparatory acts	Acts or preparation towards making a suicide attempt, but before potential for harm has begun. This can include anything beyond a verbalization or thought, such as assembling a method or preparing for one's death by suicide.
Suicide	Death caused by self-directed injurious behavior with any intent to die as a result of the behavior.

Note: Adapted from the *Self-directed violence surveillance: uniform definition and recommended data elements,* by A.E. Corsby, L. Ortega, and C. Melanson, 2011, Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

A third major challenge with studying suicide is the inherent limitations that come with studying death, namely it is impossible to interview or assess those who have completed suicide. Intent of the suicide can therefore only be assumed, with perhaps the closest assessment of intent of suicide coming from those who survive and confirm their former intent to die. Therefore there is wide inconsistency in method of assessment of suicide and suicidal behavior, leading to variations in identification of risk and protective factors. For example, Palmer et al. (2005) reported several studies use the proportionate mortality (PM, or the percentage of those who died in the sample that were diagnosed with schizophrenia and died by suicide), rather than the case fatality (CF, the percentage of the entire sample that was diagnosed with schizophrenia and died by suicide), which would inflate the reported lifetime rate of completed suicide. An example of one of these studies is Thong et al.'s (2008) retrospective case-control matched subjects' report of patients from the Institute of Mental Health in Singapore with death reports confirming suicide as the cause of death. These researchers found 46.3% of these patients had been diagnosed with schizophrenia, making it the principal diagnosis of those who died by suicide (Thong et al., 2008).

This study also demonstrates several challenges inherent with performing retrospective studies on suicide. Many researchers have used national reports of suicide and third party reports such as mental health notes, assessments and family testimonies to compare prevalence of particular factors with non-suicidal matched control groups. However, the limited nature of the available assessment data, questionable reliability of third party opinions as representative of the subject's actual experience, and therefore researchers' inability to confirm the individual's intent to die present possible limitations to the validity and generalizability of such studies' findings.

While prospective studies allow for more in-depth assessment of intent behind behaviors and breadth of factors included, they do not go without challenges. Some prospective studies have identified risk factors based on responses to structured clinical assessments such as the Structured Clinical Interview for DSM-IV (SCID-IV; Melle et al., 2006), the Positive and Negative Syndromes Scale (PANSS; Gupta et al., 1998; Mitter et al., 2013), the Beck Suicidal Intent Scales (SIS; Hariss & Hawton, 2005) and the Schizophrenia Suicide Risk Scale (Pompili et al., 2009).While the intent of such behavior can be identified through these methods, suicide is still a relatively rare occurrence, and therefore low numbers of completed suicides often makes it difficult to find statistically significant relationships between factors (Hawton et al. 2005; Kaplan et al., 2012; Qin et al., 2003).

Prospective studies also share the same limitation retrospective studies on suicide have on the number of variables for which the researchers can account. However, a weakness unique to prospective studies is there is no way to guarantee suicides will occur within a sample. Given this concern of suicide still being a rare occurrence, there is always a chance, albeit a small one, that no participants in the sample suicide. This chance increases in studies that are time-limited or brief, rather than longitudinal. As time goes on, the chance suicide will occur increases, as individuals have more time to develop suicidal ideation and act on such thoughts. Exceptions to this trend are studies that assess individuals immediately preceding or following a psychiatric hospitalization, or immediately preceding or following discharge, as these times have been identified as posing increased risk for suicide (Harwood et al., 2001; Kaplan et al., 2012; Qin et al., 2003). Additionally, individuals may not disclose their suicidal ideation or history of attempts in a valid way that represents their true experience due to fear of being stigmatized or perceived pressure to validate treatment they may be receiving (Kaslow et al., 2004).

Also, in both prospective and retrospective studies, the time period for identified risk varies greatly. For example, some studies report lifetime risk of suicide while others report acute suicide risk (within one year or the present moment; Rudd et al., 2006). This is partially a reflection of the length of the study, namely if it is longitudinal, brief, or a single time assessment. Therefore despite researchers' aims to better identify specific long-term and immediate precipitating factors related to suicidal ideation, suicide attempts, and suicide, predicting and preventing suicide still remains a difficult task.

Despite these challenges to identifying universal risk factors for suicide, several dominant factors have been identified as strongly related to suicide risk across many populations. These include being diagnosed with a psychiatric disorder, being male, having comorbid substance abuse, medical, or psychiatric difficulties, and experiencing a recent loss or life change (Canetto, 2008; Harwood et al., 2001; Kaplan et al., 2012; Nock & Kessler, 2006; Qin et al., 2003).

Suicide and the Psychiatric Population

In many countries and cultures, individuals diagnosed with a psychiatric disorder have both shared and differential suicidal risk factors in comparison to the general population. One risk factor specific to those with a psychiatric diagnosis is a psychiatric hospitalization (Busch, Fawcett, & Jacobs, 2003; Harwood et al., 2011; Qin et al., 2003; Qin & Nordentoft, 2005). According to Qin et al. (2003), a history of hospitalization for psychiatric disorder was associated with the highest attributable risk for suicide in individuals identified in the National Register of Denmark as having committed suicide between 1981 and 1997. It is important to note, however, that length of stay while hospitalized may be related to varying degrees of suicide risk in those with a history of psychiatric hospitalization. Qin and Nordentoft (2005) specifically found length of hospital stay was related to suicide risk, such that of their Denmark sample

mentioned above, higher risk for suicide was related to receiving "a shorter than median length of hospital treatment,"(p. 430). Many researchers have found immediately post-hospitalization is when individuals are most at risk (Bush, Fawcett & Jacobs, 2003; Kaplan et al., 2013; Qin & Nordentoft, 2005), though few studies have addressed how the quality and quantity of psychological services they received while in the hospital and immediately following discharge may be related to this increase in risk for suicide.

Blader (2011) reported between 1996 and 2007, rates of acute inpatient hospitalization in the United States have increased for children and adolescents, though decreased for the elderly; however, proportion of inpatient days covered by insurance decreased for children, adolescents, and adults. Therefore individuals who are hospitalized may be discharged after a shorter time due to both the hospitals and the patients wanting to avoid accruing the costs associated with treatment that may be available during a longer psychiatric stay. Implications from these studies regarding changes in hospitalization rates, length, and quality of care are important to consider when assessing the relationship between psychiatric hospitalization and suicide risk across populations.

Suicide and Schizophrenia

Suicide risk has also been differentiated by psychiatric diagnosis. Schizophrenia has been identified as the psychiatric diagnosis with the greatest lifetime prevalence of suicide, second to depressive disorders, and therefore those diagnosed with this disorder are considered at greater risk for suicide than any other diagnosis (again, aside from depressive disorders; Brugnall, Novick, Haro, Rossi, & Bartolomasi, 2012; Pompili et al., 2007; Radomsky et al., 1999). The lifetime rate of completed suicide among those diagnosed with schizophrenia is estimated to be approximately 10% (Fialko et al., 2006), and suicide has been identified as the leading cause of

preventable death among those with this diagnosis. The rate of suicide attempts has been found to be even higher within this diagnosis, ranging from 20-40% (Gupta et al., 1998; Havarky-Friedman et al., 1999).

Research Challenges

Research on suicide in those diagnosed with schizophrenia is complicated by several factors. The first of these factors is the lack of consistency in the classification and inclusion of individuals diagnosed strictly with schizophrenia, rather than another diagnosis with similar features, such as schizoaffective disorder, schizophreniform disorder, schizotypal personality disorder, or a mood disorder with psychotic features. Many studies on schizophrenia and suicide have included individuals with one or more of the above diagnoses as part of their research sample, and therefore conclusions from these studies may refer rather to suicide risk factors for a cluster of disorders, rather than strictly schizophrenia.

Such clustering presents several methodological considerations and diagnostic implications. For one, diagnostic criteria for these disorders differs both within and between diagnostic classification systems such as the Research Diagnostic Criteria (RDC), the DSM-III, ICD-10, DSM-IV-TR, and most recently, the DSM-5. For example, the DSM-IV-TR identifies each of the above disorders as essentially different disorders that share similar symptoms. The severity, chronicity, and experience of these disorders differ, and therefore generalizing risk factors from one to all others may not be accurate, no less helpful. Criteria D for schizophrenia specifies an exclusion for schizo-affective disorder based on the absence of a Major Depressive, Manic, or Mixed Episode during active-phase symptoms, or those of a brief duration in comparison with the active or residual periods (APA, 2000). The prominent presence of affective

symptoms in schizoaffective disorder absent from schizophrenia is just one example of a major difference between disorders with psychotic features.

Generalizing symptoms between disorders on the spectrum is equally problematic, as DSM-IV-TR criteria often require a certain number of a list of possible symptoms to be met. This means even individuals diagnosed with the same disorder may have slightly different symptoms, no less those diagnosed with different disorders. One of these symptoms is the presence of delusions. The presence of delusions is one of the five possible symptoms that contribute to meeting Criteria A for schizophrenia; however, only two of the five are required to meet this criterion, one if delusions are bizarre or hallucinations consist of a running commentary about the individual or two or more voices conversing (APA, 2000). Criteria A for the paranoid subtype of schizophrenia specify a preoccupation with one or more delusions or frequent auditory hallucinations. No other subtype mentions the presence of delusions except the residual type; however, Criteria A indicate there is an absence of prominent delusions (APA, 2000).

Although it is hoped proposed reliability between diagnostic classification systems, particularly between versions of the same system, such as the DSM, would negate concerns related to the reliability of a diagnosis over time, many studies have shown inconsistencies between mental health providers' diagnoses using the same, as well as different systems (Tandon et al., 2013). Recently in their article discussing changes to the schizophrenia diagnosis in DSM-5, Tandon et al. (2013) reported schizophrenia diagnosis in the DSM-IV as being well validated through antecedent and predictive factors, such as environmental risk factors and diagnostic stability, though not by concurrent validity, such as biological markers. These researchers note because a high diagnostic stability for schizophrenia in the DSM-IV has been well established, changes in the DSM-5 focus on better differentiating this disorder from other psychotic

disorders, such as schizoaffective disorder, and simplifying the diagnosis so as to reflect recent research on the heterogeneity of the disorder (Tandon et al., 2013).

This simplification and specification process may have important implications for suicide research on schizophrenia, as many of the changes included in the DSM-5 reflect concerns related to clarifying and differentiating between affective components in schizoaffective disorder and schizophrenia. For example, Tandon et al. (2013) stated while the six criteria for schizophrenia will remain, "significant mood symptoms will now have to be present for the majority of the duration of the psychotic illness in order for schizoaffective disorder to be diagnosed instead of schizophrenia" (p. 2). Also, although still only two of the five criteria as part of Criteria A for schizophrenia must be present, DSM-5 requires one of those symptoms be either delusions, hallucinations, or disorganized speech. The specification for only one of the symptoms being met if bizarre delusions or a running commentary are present has been eliminated, however, as such symptoms have not been consistently shown to influence diagnosis to the extent of requiring only one of the Criteria A symptoms be present (Tandon et al., 2013).

Therefore the DSM-5 seems to place more emphasis on the differentiation between schizoaffective disorder and major mood disorders with psychotic features by noting the predominance of mood symptoms, rather than psychotic symptoms in these disorders. Given these changes are supposedly based on information gathered from research on the etiology and course of schizophrenia since the DSM-IV, emphasizing the methodological concerns with including schizoaffective and major mood disorders in research on suicide and schizophrenia may be increasingly necessary.

Despite the various challenges to studying suicide in those with schizophrenia, several factors have been closely associated with suicidality in individuals with schizophrenia or

schizophrenia spectrum disorders, including presence of affective symptoms such as depression (specifically hopelessness and low self-esteem; Lippi et al., 2009; Pompili et al., 2007) and anxiety (specifically motor restlessness or agitation; Hawton et al., 2005), an awareness of impairment of functioning (Bourgeois, et.al, 2004; Gupta et al., 1998), early age of onset or hospitalization (Harwood et al., 2001; Kaplan et al., 2012; Nyman & Jonsson, 1986; Qin et al., 2003; Radomsky et al., 1999), poor social support (Lippi et al., 2009; Melle et al., 2006), higher level of education (Hawton et al., 2005), fear of mental disintegration (Hawton et al., 2005; Pompili et al., 2007), previous suicide attempts (Pompili et al., 2007), and increase in delusional thoughts (Lippi et al., 2009).

Affective Symptoms

It is important to explore each of the proposed risk factors in more depth, as there have often been conflicting findings regarding whether these factors contribute most significantly to suicidal ideation, attempts, and /or completions in individuals with schizophrenia. Several studies have found affective symptoms, rather than core symptoms of psychosis, are more strongly associated with increased risk of suicide attempts (Hawton, Sutton, Haw, Sinclair, & Deeks, 2005; Pompili et al., 2007; Radomsky et al., 1999). More specifically, Hawton et al. (2005) performed a systematic review of case-control and cohort studies on suicide risk factors for individuals with schizophrenia and identified previous depressive disorders and agitation, among other factors, as "factors with robust evidence of increased risk of suicide" (p. 9); however, hallucinations, which are a common psychotic symptom, were associated with lower suicide risk.

As previously mentioned, much of the data collected on suicide and schizophrenia has included individuals diagnosed with other psychotic disorders, which may increase generalization of risk factors across disorders, rather than identifying risk factors specific to

schizophrenia. Following this concern, Radomsky et al. (1999) specified suicide risk between and across psychotic disorders and found the highest 1-month and lifetime suicide rates in their sample were individuals diagnosed with a past or current major depressive episode as part of major depressive disorder with psychotic features or schizoaffective disorder, rather than schizophrenia. In their attempt to understand suicide risk across and between diagnostic groups, Mann et al. (1999) compared subjective and objective symptom reports of psychiatric patients at index hospitalization. The majority of their sample was diagnosed with one of two diagnoses: those with a history of a major depressive episode (51%), or those with either schizophrenia, schizoaffective disorder or schizophreniform disorder (36%). They found no differences between percentages of individuals who endorsed past suicide attempts and those who did not, either within or between any diagnostic category (53% of those with a major depressive episode with past attempts vs. 52% of those with schizophrenia, schizoaffective disorder, or schizophreniform disorder).

Given the aforementioned concerns about assuming individuals with separate psychotic disorders share the same suicide risk, it is possible the stronger presence of depression in those with schizoaffective or schizophreniform disorder influenced the similar percentages the researchers found between these diagnostic groups. Differentiating between subjective and objective symptom ratings seemed to support this possibility. More specifically, the 184 patients who endorsed past suicide attempts gave higher scores on subjective ratings of depression (Beck Depression Inventory), suicidal ideation during the week before hospitalization (Scale for Suicidal Ideation), and fewer reasons to live (Reasons for Living Inventory) than those who did not attempt. However, objective ratings of severity of depression (Hamilton Depression Rating Scale) or psychotic symptoms (Brief Psychiatric Rating Scale, Scale for the Assessment of

Positive Symptoms, and Scale for the Assessment of Negative Symptoms) did not distinguish attempters from non-attempters (Mann, Waternaux, Haas, & Malone, 1999). Such differences in objective vs. subjective ratings of individuals' psychological well-being may indicate the importance of assessing and understanding individuals' intent and meaning behind behaviors and symptoms, rather than simply their presence or absence.

Also, the lack of differentiation between individuals with or without past attempts on objective ratings of depression or psychosis may indicate objective diagnostic categorization may need further specification. Since subjective ratings of depression were related to past attempts across diagnoses, and no differences in past attempts were found between diagnoses, it is possible the grouping of the two psychotic disorders with more affective components (schizoaffective and schizophreniform disorder) with schizophrenia may have influenced the similar percentage of past attempts shared by the diagnostic groups. Similarly, the relationship between psychotic symptoms and past suicide attempts may have been less robust due to the combining of separate psychotic disorders into one category.

Another important point from this study is that the researchers found subjective ratings of hopelessness (Beck Hopelessness Scale) were independently related to a history of suicide attempts, with or without subjective ratings of depression, across diagnostic groups. The strength of the relationship between hopelessness and past suicide attempts apart from depression may have important implications for schizophrenia, as it indicates hopelessness may somehow differ from depression, and therefore may be a more important factor to assess in individuals with less depressive symptoms. Because schizophrenia, unlike other psychotic disorders, does not include a predominance of affective symptoms, namely depressive symptoms, it is possible more specific factors, such as hopelessness, if not differentiated from other depressive symptoms, may

contribute to the relationships past studies have found between schizophrenia, depression, and suicide risk.

The possibility that hopelessness may be a core aspect of individuals' feelings surrounding the viability of the option of suicide (Lippi et al., 2009; Mann et al., 1999) reinforces the importance of assessing individuals' perceptions of how their symptoms are impacting their sense of confidence and abilities to improve their situation, particularly in relation to participation in, and effectiveness of treatment. As suicide risk and hopelessness have been identified as greater immediately after acute psychiatric treatment, it is important to consider the nature of hospital treatment and other related potential risk factors for suicide in individuals with schizophrenia in more depth.

Age/ date of Hospitalization

A prior history of hospitalizations for mental illness, particularly if individuals were hospitalized for suicide attempts, has been related to later higher risk for suicidal activity (Zhang et al., 2005). Nyman and Jonson (1986) reported suicide may occur at any phase of schizophrenia, especially if it is severe with frequent relapses and re-hospitalizations. The relationship between hospitalizations and suicide risk in schizophrenia, however, seems to be complicated by several factors. For example, in their 20 year follow-up study, Kaplan et al. (2012) found the majority of individuals diagnosed with schizophrenia at index hospitalization who committed or attempted suicide did so within the two years following their initial hospitalization; however, poor early post-hospitalization global functioning after two years was significantly associated with suicidal activity four and a half years later for males diagnosed with schizophrenia.

These results highlight the need to address the effectiveness of inpatient treatment for this population, as with proper acute treatment one would hope suicide risk would decrease. Nonetheless, many other researchers have identified the early years surrounding hospitalization as posing the highest suicide risk for individuals with schizophrenia (Caldwell & Gottesman, 1990; Mann, Waternaux, Haas, & Malone, 1999; Palmer, Pankratz, & Bostwick, 2005; Qin et al., 2003; Qin & Nordentoft, 2005; Radomsky et al., 1999). For example, Caldwell and Gottesman (1990) proposed first admissions and new-onset studies more accurately estimate suicide risk because they include initial years of illness when deaths by suicide seem to be highest. In relation to these findings, being diagnosed with or hospitalized for schizophrenia at a younger age has been found to increase risk for suicidal activity (Gupta et al., 1998; Kaplan et al., 2012; Lippi et al., 2009; Pompili et al., 2007; Radomsky et al., 1999).

Such consistency in reported risk near hospitalization has prompted subsequent research addressing the potential factors influencing this phenomenon. Qin and Nordentoft (2005) specified that the association between affective symptoms with increased suicide risk in individuals with schizophrenia decreases after treatment and recovery, but is strongest immediately after admission to, or discharge from, the hospital. Again, the influence of affective symptoms seems to play a significant role in the relationships found between suicide and schizophrenia, though perhaps this role fluctuates over the course of the illness.

To better understand such possible fluctuations, Brugnall et al. (2012) conducted a follow-up study to the Schizophrenia Outpatient Health Outcome (SOHO) study exploring suicidal activity (attempt or completion) and baseline characteristics of individuals diagnosed with schizophrenia participating in outpatient mental health treatment over a three-year period. They found individuals who attempted or completed suicide within these 3 years had a history of

hospitalization(s) for schizophrenia and more severe depressive symptoms, though age of onset did not differentiate those with suicidal activity from those without it. It is important to note these individuals were receiving consistent outpatient psychiatric (pharmacological) treatment before and during the time of the study. This marked discrepancy in the relationships between depressive symptoms in schizophrenia and time of hospitalization is important to explore, as the previously mentioned concerns regarding quality of treatment, length of hospital stay, and rate of hospital admission may relate to the inconsistencies in the relationships proposed between time of suicide, inpatient and outpatient treatment, and schizophrenia.

The high rates of suicide near initial hospitalization at onset of schizophrenia are not surprising, given at this acute stage individuals are likely experiencing their symptoms at an extreme level, with no prior treatment upon which to rely for coping skills or guidance. Similarly, immediately after being admitted and receiving a diagnosis of schizophrenia, individuals likely are overwhelmed by their rapid psychological decompensation, the potential the diagnosis poses for lifelong disability, and may still be experiencing symptoms at an acute level, thus potentially increasing the risk for suicide. However, during treatment and following hospitalization, one would expect risk for suicide to decrease, as with proper treatment individuals often gain better understanding of, and abilities to manage their symptoms.

The increased risk many studies have proposed immediately following discharge, particularly when depressive symptoms are present, may indicate certain aspects of individuals' functioning are not being adequately addressed in treatment. Becoming aware of new limitations and unavoidable changes in lifestyle immediately prior to or following a hospitalization may be one of these aspects, particularly when the challenge with, and responsibility for making those changes may be most obvious (Bourgeois et al., 2004; Gupta et al., 1998; Hawton et al., 2005).

For example, Bourgeois et al. (2004) conducted a two-year study with individuals diagnosed with schizophrenia and found high awareness of impairment at initial hospitalization, mediated by depression and hopelessness, increased risk of suicide attempts and hospitalization to prevent suicide; however changes in awareness associated with treatment decreased the risk of suicide.

These findings suggest individuals' awareness of both their current limitations and the potential future limitations their developing mental illness poses on their wellbeing and lifestyle may increase their depression and hopelessness, though increasing awareness of how to successfully contend with these new challenges in treatment seems to mediate the risk depression and hopelessness pose for suicide. It is important to mention awareness of impairment in functioning may differ from insight. For example, in a meta-analysis of 29 studies identifying risk factors for individuals diagnosed with schizophrenia, delusional psychoses, paranoid psychosis, psychosis NOS, schizotypal personality disorder or schizoaffective disorder, Hawton et al. (2005) found insight was not associated with suicide risk, though awareness of impairment in functioning was. Similarly, Pompili et al. (2007) found insight may only be associated with increased suicide risk if accompanied by hopeless awareness of limitations of the illness.

Therefore, the increased risk of suicide attempts and completions for individuals with schizophrenia receiving psychiatric treatment when depressive symptoms, particularly hopelessness, are higher may suggest the management of particular symptoms with interventions most prevalent in hospital and outpatient psychiatric settings, including psychotropic medication, only partially addresses the distress individuals with schizophrenia experience. Also, if the presence of depressive symptoms in individuals with schizophrenia is more consistently related to suicide risk, regardless of differences studies mention between participation in hospital or outpatient treatment, perhaps insight-oriented treatment that addresses the hopelessness, decrease

in self-confidence, and difficulties controlling present and future impairments in functioning would more adequately address the complex subjective experience of developing schizophrenia.

Fear of Mental Disintegration

Following this proposed focus, a particular aspect of such hopeless awareness and lack of control that is often experienced by individuals with schizophrenia is a fear of mental disintegration (Gupta et al., 1998; Hawton et al., 2005; Pompili et al., 2007; Pompili et al., 2009). Mental disintegration has been defined as a marked fear of losing mental control, losing touch with reality, or "going mad" (Hutton, Bowe, Parker, & Ford, 2011). Symptoms associated with such mental disintegration include the development of delusions, hallucinations, paranoia, cognitive disorganization, feelings of ambiguity and blending of boundaries between self and other. Pompili et al. (2007) found suicidal individuals with schizophrenia who are aware of their deteriorating cognitive and functional capacities often express fear of further mental deterioration. Neuroscientific research has classified schizophrenia as "a disruption of functional integration of neural systems rather than as regionally localized abnormalities, thus supporting the notion of schizophrenia as a disconnection syndrome" (Canuet et al., 2011). Therefore, the symptoms and experience of fearing losing control of one's mind are likely reflective of actual neurological processes in schizophrenia, thus substantiating the lack of control and hopelessness that may contribute to individuals with this diagnosis becoming suicidal.

Given this fear of mental disintegration or disorganization appears to have cognitive, emotional, and neurological components, it is likely an important aspect to address when assessing suicide risk and approaching treatment with this population. Pompili et al. (2009) showed fear, as well as loss of job skill, was the highest predictor of suicide for individuals with schizophrenia, as those who were more frequently rated as at higher risk reported experiencing

fear for more than 50% of the last 6 months. The widely-experienced, subjective nature of this fear of deterioration suggests the necessity to incorporate individuals' perceptions of how their objectively identified symptoms are understood, as fear surrounding such disintegration may not be obvious to the outsider. Failing to address the meaning an individual is attaching to such symptoms may result in less effective treatment, and in the case of suicide assessment, a potential life lost. To address this concern regarding appropriate treatment, Pompili et al. (2007) reported individuals with schizophrenia who expressed such fears reported higher suicidal activity, losing faith in treatment or become overly-dependent on it. Given this fear of disintegration consists of a strongly felt sense of loss of control, this loss of faith in treatment or tendency to rely too heavily upon it may indicate interventions that do not address individuals' perceptions of losing agency over their lives have the potential to perpetuate such individuals' lack of self-confidence, dependence, and hopelessness, thus potentially increasing risk for suicide.

Locus of Control

To further explore the relationship between perceived control and suicide, it may be important to turn to the concept of locus of control. As originally defined by Julian B. Rotter in 1954, it refers to the extent to which individuals believe they have control over their lives. Individuals with an external locus of control tend to attribute life circumstances and their outcomes as being dictated by others, chance, or fate; whereas those with an internal locus of control tend to see themselves as having the central responsibility for, and ability to determine their life situation. In relation to treatment of psychological disorders, an external locus of control may be related to seeing the mental health provider, family, or significant others in the individual's life as more responsible for his or her healing and recovery process, rather than

seeing him or herself as the source of psychological distress and/or success in treatment. Both stances carry pros and cons in relation to individuals' self-concept; an external locus of control regards others and the world as the source of the distress, though absolves the individual of his or her sense of agency in recovery; whereas an internal locus of control may identify the individual as the primary source of distress, as well as the primary source of power in the healing process.

Harrow et al. (2009) explored the relationship between locus of control, depression, anxiety, self-esteem, recovery, and major symptoms over 15 years and found individuals with schizophrenia who reported a higher internal locus of control were more likely to experience at least one period of recovery over 15 years. Patients with schizophrenia who had higher external locus of control at the 4.5 year follow-up were likely to be more depressed and have higher psychotic activity, though those with paranoid schizophrenia were not more external or internal than those with undifferentiated schizophrenia. In general, patients who reported having an external locus of control were significantly more likely to score high on anxiety, hostility, and lower self-esteem than those with an internal locus of control (Harrow et al., 2009).

These results may validate the importance of empowering this population to become active agents in understanding and confronting the psychological challenges that come with developing schizophrenia. As previously mentioned, the disruptive, disorganizing nature of this disorder has the potential to leave individuals feeling hopeless, fearful, and unsure of themselves and their future. Addressing individuals' perception of the source of such psychological disorganization, as well as their beliefs surrounding their abilities to invoke change in their own lives may increase specificity and efficacy of both acute and ongoing treatment and prevention of suicide in individuals with schizophrenia.

Social Support

Addressing the role social support may play in individuals' abilities to cope with the development of schizophrenia, particularly in relation to mediating suicide risk, may present another important option to consider in treatment. As individuals attempt to understand and cope with changes in daily cognitive, occupational, and emotional capacities that often come with developing schizophrenia, feeling as though no one else understands, no less desires to understand their experience can contribute to significant feelings of isolation. Without a strong social network or immediate source of social support, the previously mentioned experiences of decreasing self-esteem, hopelessness, and fears of completely losing control of oneself may become more unbearable, with suicide becoming a potentially more salient option.

The research on the association between lack of social support and increased risk for suicide in individuals with schizophrenia is robust and consistent (Brugnall et al., 2010; Lippi et al., 2009; Pompili et al., 2007; Qin et al., 2003; Radomsky et al., 1999). However, the type of social support and the historical influence or presence of the social support may be differentially related to suicide. For example, individuals with schizophrenia who have never been married or are not currently married, are at greater risk for suicide (Brugnall et al., 2012; Lippi et al., 2009; Pompili et al., 2007). Hawton et al.'s (2005) systematic review of suicide risk factors found living alone or not with family was associated with increased suicide risk, though living with family was not significantly related to reduced risk. The particular living arrangements of those not with family, however, were not specified. This detail may be important to consider in relation to suicide risk, as many individuals with schizophrenia who do not live with family or alone reside in a group residential facility or nursing home. It may be important to consider how such

structured social environments interact with an individual's perception of being socially supported, particularly when addressing how living situation may impact potential for suicide.

In a similar vein, Radomsky et al. (1999) investigated how contact with a significant other or family relative may be related to suicide potential for individuals with either chronic schizophrenia or schizoaffective disorder, as they mentioned living alone does not necessarily mean individuals have limited family or social contact. The researchers categorized individuals with less than five hours per week of contact with a significant other or family member over the past month as having minimal social contact. Results showed such individuals had a higher lifetime rate of suicide attempts than those with more than minimal social contact (Radomsky et al., 1999). However, their findings still do not address whether this contact was perceived by such individuals as socially supportive.

To better understand how the quality of such contact and social environments may be related to suicide risk, Pompili et al. (2007) identified recent loss or rejection, limited external support, social isolation, and family instability as suicide risk factors for individuals with schizophrenia. Such findings suggest both the availability and individuals' perceptions of the reliability of available social contacts may influence their choice to turn to them for support, and subsequently influence their risk for suicide. Lippi et al. (2009) attempted to identify social factors related to suicide risk in individuals who had been identified in a previous study twenty years earlier as at high risk for suicide (Roos, Borraine, & Bodhemer, 1992). Of the 33 participants in the original study, the researchers were only able to establish contact with 14, three of whom had committed suicide and were represented by family accounts. Lippi et al. administered the Beck Hopelessness Scale (BHS) and Calgary Depression Scale for

Schizophrenia (CDSS) to the surviving individuals, as scores on both of these instruments have been validated as validly assessing suicide in individuals with schizophrenia (Lippi et al., 2009).

Results from this study should be considered with caution, however, as the small sample size significantly decreased the significance of trends the researchers report. Nonetheless, interesting patterns emerged: all three of the suicide victims were single, only one surviving subject was married, and the four subjects living with family had lower BHS and CDSS scores than the six who were not. The four subjects who reported infrequent or no contact with family had higher lifetime rates of suicide attempts and at the time of the study were identified as at high risk for suicide (Lippi et. al., 2009). Perhaps one of the more interesting findings from this study is those who were voluntarily hospitalized at the time the study was conducted reported lower BHS and CDSS scores that those living in hallway houses, shelters, or missions; however, those who were involuntarily hospitalized reported higher BHS and CDSS scores.

Given the concerns regarding the nature of inpatient care, the importance of the individual's perception of the support offered by their family and living environment, it may be important to explore how community care and the health care system in general may act as a potential source of social support. For example, Melle et al. (2006) studied the efficacy of early prevention community programs that bring individuals into treatment at early symptom development and found the rate of severe suicidality (plan or attempts) was significantly higher in individuals with schizophrenia from communities without early detection programs. However, significantly more individuals from communities without early detection programs than those with early prevention programs were married or cohabitating (Melle et al., 2006). Given the former relationships found between being single, unmarried, or divorced and being at higher risk for suicide, it is possible such early intervention programs have the potential to mediate the

influence marital status has on suicide risk in those with schizophrenia. Similarly, when compared to the prior mentioned studies that identify living alone, without family, with less than five hours of contact with family or a significant other as related to higher risk for suicide, Melle et al.'s (2006) reporting of the efficacy of early prevention programs highlights the aforementioned need for interventions that address this population's perception of their capabilities and confidence to engage meaningfully with others in their attempts to reclaim a sense of ownership and control over their lives.

Pre-morbid Functioning

An individual's level of pre-morbid functioning and related confidence in him or herself as a contributing, able member of society may be related to his or her abilities to cope with the development of schizophrenia and confront the resulting potentially depreciated quality of life. It would follow that individuals who achieved a high level of education, obtained a steady occupation, and were generally functioning well in society before developing schizophrenia would have a larger pool of cognitive and social resources to facilitate their adjustment. However, many studies have identified good pre-morbid functioning as a suicide risk for individuals with schizophrenia (Kaplan et al., 2012; Pompili et al., 2009). The question of employment and education as they relate to pre-morbid functioning in individuals with schizophrenia is complicated by the relatively young age at which the disorder tends to peak (23 for men, 28 for women). Where several studies show unemployment and lower education as related to increased risk for suicide (Qin et al., 2000; Stack, 2000), those with schizophrenia are already less likely to either a) have a pre-morbid employment history due to young age of onset, or b) pursue higher education or find steady employment following onset due to the nature of the disorder. Therefore relationships between unemployment and suicide risk for individuals with

schizophrenia may be misleading, as this population may have less opportunities to pursue education or employment before the debilitating aspects of the disorder interfere.

Nonetheless, Pompili et al. (2009) specified in their sample of 39 individuals diagnosed with schizophrenia at initial hospitalization, individuals with a history of serious suicide attempts were 24 times less likely to report loss of job skills in demanding jobs than those without a history of suicide attempts. The researchers suggested such results could indicate "those who were more disorganized and who were functioning poorly were also those who did not experience the demoralization syndrome that is often found among those whose risk of suicide increases when they become aware of their impairment" (Pompili et al., 2009, p. 204). Given the conflicting findings regarding the association between insight and suicide, it is possible a greater awareness of impairment of functioning may influence the individual more negatively when the individual's premorbid level of functioning was vastly higher than his or her level of functioning once the illness becomes most prominent.

In their 20 year follow-up study of individuals diagnosed with schizophrenia at initial hospitalization, Kaplan et al. (2012) found 11 of their 26 males (42.3%) with schizophrenia with poor global functioning scores at two years following index hospitalization showed suicidal activity 5.5 years later (Chi square= 5.40, df = l,p < .05). Their measure of global functioning (the Levington-Klein-Pollack scale [LKP]) measured work and social adaptation, life disruptions, self-support symptoms, relapses, and re-hospitalization (Kaplan et al., 2012). Although these findings are related to functioning in the two years following initial hospitalization, rather than the years preceding it, the finding that individuals with poor global functioning later became suicidal may be related to their awareness of their continued deteriorating cognitive abilities following hospitalization, a factor that has been previously

mentioned as relating to increased suicide risk for those with schizophrenia. Where one would hope successful inpatient and follow-up outpatient treatment would provide individuals with the coping skills, education, community resources and support to increase their sense of control and confidence in preventing further distress related to mental disintegration and compromised lifestyle, the increased risk for suicidal activity following treatment is concerning. The question of the quality of both acute and continued care in relation to successful suicide prevention for those with schizophrenia is again implicated here.

Delusions

Though individuals with a higher education may be more apt to understand the progression of their symptoms and how they may be impairing their functioning, this understanding can be clouded by the intrusion of delusional thoughts that disrupt and challenge the individual's logic and understanding of his or her world. The development of delusional thoughts, however, is not always indicative of a thought disorder or the development of a psychotic disorder such as schizophrenia. Differentiating between individuals with paranoid or delusional thoughts and those with a formal thought disorder as part of a psychotic disorder can be a difficult task, as some degree of paranoia and bizarre thinking or beliefs exist among the general population (Jones & Fernyhough, 2008). Delusions are one of many symptoms indicated in schizophrenia, though are not necessary to receive this diagnosis. A formal thought disorder may differ from the presence of transient delusions, though even individuals with schizophrenia seem to experience fluctuations in severity, and frequency, of such thoughts. Delusions also vary widely in their content, as distinctions have been made between religious, grandiose, nihilistic, and persecutory delusions, to name a few. Therefore, for research purposes, it seems necessary to assess the nature of such thoughts thoroughly, as their presence has the potential to influence

diagnostic classification as well as conclusions about relationships between such thoughts and prognosis.

According to the DSM, delusions may be a component of a wide range of psychological disorders, including, but not limited to schizophrenia, schizoaffective disorder, schizotypal disorder, delusional disorder, psychotic disorder not otherwise specified, and mood disorders with psychotic features. The length of time such thoughts are present, their prominence in relation to affective components, and the severity of which they impact daily functioning differ between these diagnoses. If the content of the delusional thoughts seems to center around a particular theme, they may be classified according to that theme (religious, persecutory, nihilistic, grandiose). When these themes seem to consistently pervade an individual's perception, they may be considered delusions resulting from a thought disorder as part of a formal psychotic disorder, rather than transient delusional thoughts.

For example, according to DSM-IV-TR criteria, the paranoid subtype of schizophrenia is characterized by the dominance of paranoid or persecutory delusions that have been present for one to six months and is the most common subtype of schizophrenia (APA, 2000). This subtype is differentiated from other subtypes by a lack of disorganized speech, disorganized or catatonic behavior, or flat or inappropriate affect, and has been identified as having the best prognosis when compared to the disorganized, catatonic, or undifferentiated subtypes (APA, 2000). However, some studies have identified those with paranoid schizophrenia as having a higher suicide risk than those with deficit or negative subtypes, such as catatonic schizophrenia (Fenton, McGlashan, Victor, & Blyler, 1997).

This specificity of delusional organization and subsequent delineation of respective subtypes, however, is not made for any other psychotic disorder. Because this subtype of

schizophrenia seems to appear more often than other subtypes and may be differentially related to prognosis, it seems important to make the distinction between this subtype and others, as well as between psychotic disorders, as such differentiation in pervasiveness and prognosis may have significant implications when identifying risk factors for suicide and appropriate treatment.

However, the new DSM-5 eliminated the subtypes of schizophrenia and a new diagnosis of schizophrenia spectrum disorder has been added. Justifications for eliminating the subtypes was based on the belief that they do not adequately account for the heterogeneity in schizophrenia (Angell, 2013; Frances & Widiger, 2012; Tandon, 2013). Another adjustment in the DSM-5 includes the elimination of the requirement for only one of the characteristic symptoms of Criteria A for schizophrenia be met if bizarre delusions or Schneidarian "first-rank" or special hallucinations are present, as these symptoms "have not been found to have diagnostic specificity," (Tandon et al., 2013, p. 2). Tandon et al. (2013) reported such changes were only made if doing so "substantially improved clinical utility or enhanced validity and increased concordance with the International Classification of Disorder (ICD, World Health Organization, 1992) definition of schizophrenia" (p. 2). As those diagnosed with schizophrenia based on only meeting one of the five symptoms listed under Criteria A due to presence of bizarre delusions or special hallucinations reportedly make up only 2% of the schizophrenia population, Tandon et al. (2013) stated the diagnosis of schizophrenia will be simplified and therefore more clinically useful.

Such changes have several implications when referencing past studies that relied on DSM-III, DSM-IV, or DSM-IV-TR criteria, as the changes in criteria, particularly in relation to also reflect changes in theoretical understandings of the role delusions play in schizophrenia. The three major theories that are reflected in DSM criteria and explanations of schizophrenia are

those of Kraeplin, who focused on avolition, chronicity and poor outcome; Bleuler, who emphasized the dissociative nature of pathology and negative symptoms, and Schneider, who stressed reality distortion and positive symptoms. The shift in the DSM-5 away from the Schneidarian positive symptoms as defining characteristics of schizophrenia may indicate the type of delusion is less related to prognosis and outcome of schizophrenia, and perhaps other aspects of this disorder, such as chronicity of delusions, are more important to consider.

Although these researchers mention such changes also had the intent of more accurately differentiating schizophrenia from schizoaffective disorder, this lack of differentiation between type of delusions and the addition of a "schizophrenia spectrum disorder" to the DSM-5 seems counterproductive to efforts to clearly define either of these disorders. Bizarre delusions may not have "diagnostic specificity," though clear differentiations of prognosis and frequency in clinical presentation have been identified for paranoid or persecutory delusions, and therefore between the paranoid, disorganized, and catatonic subtypes of schizophrenia. The suggestion that these subtypes do not fully account for the heterogeneity in schizophrenia may be accurate; however, eliminating them all together, as Tandon (2013) stated, actually simplifies schizophrenia, generalizing and homogenizing the clinical presentation, rather than further differentiating it from other psychotic disorders.

Given the paranoid subtype of schizophrenia has been related to better prognosis and seems more prevalent, perhaps the elimination of subtypes follows a similar shift in the theoretical conceptualization of schizophrenia suggested above; namely, the chronicity and maintenance of the paranoid and persecutory beliefs, rather than the specific content and presence, may be considered more important in prognosis and treatment outcome. However, if this is so, the differentiation between the chronicity of delusions in schizophrenia and other

psychotic disorders in DSM-5 still suggests they are separate disorders, rather than one diagnostic category.

The complications that have come from such long-term debates about delusions and diagnostic classification of schizophrenia are evident in the literature. Research that explores paranoia and delusions in individuals diagnosed with one of the psychotic disorders now considered a schizophrenia spectrum disorder (schizoaffective disorder, schizophreniform disorder, or schizotypal personality disorder) has been widespread in its focus, and the conclusions regarding associations between level of functioning and presence, or severity of delusions and paranoia vary just as widely. Given previous concerns related to the inclusion of multiple psychotic disorders in a catch-all category of schizophrenia for research purposes, it may be important here to address the measures these studies have used to identify delusions, formulate a diagnosis, and draw conclusions related to risk factors and prognosis, such as the potential for suicide.

Harrow and colleagues (2004) explored belief certainty (BC), self-monitoring (SM), and emotional commitment (EC) to delusions with 57 delusional schizophrenia and non-schizophrenia outpatients, 50 non-delusional outpatient controls, and 42 delusional inpatient controls to better understand the impact of delusions on work and community functioning. The Schedule for Affective Disorders and Schizophrenia (SADS) and the BC, SM, and EC scales on the Personal Ideation Inventory (PII) were used to diagnose these patients and address aspects of delusions (Harrow et al., 2004). Although patients differed in intensity of delusions, emotionality in connection to delusions (EC), and belief in delusions (BC), the presence of any kind of delusion was associated with poorer work and community functioning. Individuals with schizophrenia or affective disorders who showed high emotional commitment (EC) to their

delusions had poorer work functioning and a higher likelihood of re-hospitalization, which the researchers mention “indicates the importance of patients' feelings of immediacy and urgency about their unrealistic beliefs” (Harrow et al., 2004).

The researcher’s focus on dimensions of delusions using specific scales from the Personal Ideation Inventory lends insight into the individuals’ subjective experience of the delusions as well as their objectively assessed level of functioning. Addressing individuals’ perception of their symptoms and their understanding of how they are affecting their daily lives is an area of inquiry that has been previously identified as important for suicide risk assessment and prevention. The emphasis this study places on the subjective experience of delusions supports this idea, and suggests asking about the meaning delusions hold for individuals may lead to better understanding of how delusions relate to individuals becoming suicidal.

Another intriguing finding from this study is patients with schizophrenia and those with affective disorders (schizoaffective, bipolar with mania, and “other non-schizophrenia patients who were psychotic at hospitalization” (Harrow et al., 2004, p. 149) displayed similar poor levels of functioning in the community when they endorsed high emotional commitment to their delusions (including high preoccupation with the delusional idea and high impact on their behavior; Harrow et al., 2004). In combination with previously mentioned studies that identify awareness of impairment in functioning, poor occupational functioning and recurrent hospitalizations for a mental illness as being associated with higher risk for suicide, results from this study may suggest both the mere presence of delusions and the individual’s perception of how delusional thinking is impacting their functioning may be important to address when assessing suicide potential across diagnoses, rather than just for those with schizophrenia.

However, as discussed previously, the difference between delusional thinking and a formal thought disorder, particularly in reference to the different impact they may have on individuals' functioning, is still not well-understood. Harrow et al. (2000) explored how a thought disorder in schizophrenia may be influenced by failure to attend to (take in) and/or hold mental representations of immediate target contextual material in order to respond in an appropriate manner (process the material; Harrow et al., 2000), a deficit that is also hypothesized to contribute to delusion formation (Harrington et al., 2005; Jacobs, 1980). Their sample of outpatients who had been formerly diagnosed at initial hospitalization in The Chicago Follow-Up Study were classified as having severe or very severe, moderate or evidence of bizarre thinking, or no thought disorder within each diagnostic category (55 schizophrenia patients, 31 bipolar mania patients, and a control group of 78 nonpsychotic psychiatric patients), according to scores on the Comprehension subtest of the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955) and the Goldstein- Scheerer Object Sorting Test (Goldstein & Scheerer 1941). Patients were then administered the Gorham Proverbs Test and scored on (a) whether they ignored the proverb or the concept involved, and (b) whether the response deviated from the proverb or concept involved (Harrow et al., 2000).

Of the 49 patients classified as having a severe thought disorder, 42 were diagnosed with schizophrenia or bipolar disorder. Only 9% of those diagnosed with schizophrenia completely ignored the proverb or its context (failed to take in the information), whereas 18% of those diagnosed with schizophrenia and had a severe thought disorder ignored it (Fisher's exact test: $p = 0.05$). However, significantly more patients with schizophrenia and a severe thought disorder strayed from the context (68%), rather than completely ignoring it. Therefore it is possible those diagnosed with schizophrenia who exhibit a thought disorder may experience greater difficulties

processing and responding appropriately to contextual cues, rather than difficulties attending to them. The formation of a delusion through the misattribution of significance to contextual cues and other's intentions may be related to this deficit. To follow this notion, Harrow et al. (2003) explored the nature of disordered verbalizations in patients diagnosed with schizophrenia from the same follow-up study and found those who showed disordered verbalizations and strange ordering of objects interjected personal, often delusional ideas in inappropriate contexts. Strange verbalizations were considered indicative of a thought disorder, and therefore may be important aspects of an individuals' presentation to address when assessing for delusional beliefs and determining potential risk for suicide, given the formerly mentioned relationship between delusions and poor work and community functioning, and the relationship between poor global functioning and increased suicide risk for those with schizophrenia.

It is also important to note that bipolar patients in Harrow et al.'s (2000) study strayed from the context significantly more than schizophrenia or control patients; however, of those with a severe thought disorder, no significant differences in straying were found between diagnostic categories (Harrow et al., 2000). Therefore a formal thought disorder may have a strong impact on cognition and behavior across diagnoses, rather than solely for specific disorders. In keeping with the question of how delusions may relate to a thought disorder, delusions across diagnostic categories that show evidence of a thought disorder may contribute to poorer functioning for a wide range of diagnoses, as Harrow et al. (2004) proposed, rather than just those with schizophrenia.

The mere presence of delusions in relation to suicide potential, though plausible based on the relationship between delusions and other risk factors for suicide, has not been well-founded. For example, in their retrospective study of 112 patients who had committed suicide during a

psychiatric hospitalization, Powell, Geddes, Hawton, Deeks, and Goldacre (2000) found the presence of delusions was one of five factors with a likelihood of predicting suicide greater than 2%, though the likelihood ratio for delusions was only 2.3%. However, only two of these patients had a predicted suicide risk above 5% based on this model, and therefore the researchers stated the identified predictive power of delusions for suicide may not be representative of that which exists in the real-world psychiatric population. Another limitation to this study was that predictive factors were not examined separately for various psychiatric diagnoses, rendering differentiation of factors' predictive value for suicide between diagnoses, such as schizophrenia and major depressive disorder, impossible. As different risk factors for suicide have been identified between psychiatric diagnoses, it would follow that predictive factors for suicide would as well, particularly because certain factors, such as depression or delusions, are more prominent in certain disorders than others.

Several subsequent studies have attempted to specify the relationship between delusions and suicide for particular psychiatric diagnoses. For example, Grunebaum et al. (2001) assessed clinical symptomology and history of suicidal activity (ideation or attempts) in 429 individuals diagnosed with either major depressive disorder (*n*=223), schizophrenia (*n*=150), or bipolar disorder (56) following inpatient or outpatient admission. Delusions were not related to a history of suicidal ideation or suicide attempts for any diagnostic category (Grunebaum et al., 2001). These findings run counter to the previously proposed suggestion that delusions may be related to increased suicide risk through their association with poor work and community functioning, or that they are predictive of suicide in psychiatric patients in general.

However, as and Pompili et al. (2009) noted in their aforementioned study, patients with schizophrenia who reported past severe suicide attempts were less likely to report recent loss in

job skill than those without past attempts. The diminished quality of life that individuals with more severe and disorganizing symptoms may experience, such as a thought disorder or delusions, may preclude (a) attainment of a steady occupation, and therefore they may have less skills to lose, or (b) awareness of impairment of occupational and community functioning if their reality is distorted by their delusions. Following this last notion, if individuals form a delusion about their abilities to continue functioning in the world, or misattribute the cause of their decline in functioning to others (external locus of control), rather than themselves (internal locus of control), perhaps self-reports of loss of job skills would be less frequent than for individuals without a similar delusion.

Persecutory delusions and grandiose delusions, for example, may allow individuals to shift the source of distress from themselves to others, thereby decreasing conscious awareness of their developing cognitive, emotional, and social difficulties, and offering respite from the detrimental impact developing schizophrenia may have on their self-esteem and sense of agency in their lives. Therefore, it is possible individuals with schizophrenia who experience delusions of this nature display an outward image of higher self-esteem than they may actually experience if they were more aware of their decline in functioning, assuming they experienced a significant decline. In relation to suicide potential, one may argue the shift from an inward source of blame, guilt, or fear to an outside force in such delusions may have a protective factor; if delusions are related to decreased awareness of developing impairments and protect a sense of self-esteem, perhaps potential for suicide would also decrease.

The sparse research on delusions and suicide in schizophrenia has yielded conflicting results, though based on previously identified relationships between similar factors, it is an area deserving of more comprehensive investigation. For example, Hawton et al. (2005) conducted a

systematic review of 29 international cohort and case-control studies of risk factors for suicide in schizophrenia and found the presence of delusions was not associated with suicide risk, though they cited significant heterogeneity among the studies (p=.02). However, when one study that used schizophrenia patients at high risk for suicide as a control group in comparison to those who had committed suicide, the presence of delusions was associated with lower risk of suicide (OR=0.48, 95% CI; heterogeneity p=.04).

Although such systematic reviews of literature may provide comprehensive summaries of identified risk factors for particular populations, it is often difficult to delineate specificity regarding how factors were assessed, which diagnoses were included, and what other variables the studies may have identified as mediating relationships between the targeted research factors. For example, an important piece of information missing from this particular study is whether those with diagnoses other than schizophrenia, such as schizoaffective disorder or schizophreniform disorder, were included in the studies' samples. Also, how delusions were assessed, particularly whether they were transient or more persistent, was not available through this systematic review. Such details may be important in determining the validity of the relationship identified between delusions and lower suicide risk in schizophrenia, given affective symptoms, belief in and commitment to delusions have been found to significantly impact suicide risk and/or prognosis for those with schizophrenia. If delusions are indeed related to lower suicide risk, the prior suggestion that delusions may serve a protective purpose for those with schizophrenia may be worth exploring in more depth.

Though the literature on delusions and schizophrenia neither negates nor supports this stance, several studies raise additional questions surrounding the conflictual relationship between delusions and suicide in schizophrenia. Fenton et al. (1997) retrospectively assessed suicidal

activity, positive and negative symptoms of patients from the Chestnut Lodge Follow-Up Study with schizophrenia (*n*=187), schizoaffective disorder (*n*=87), schizophreniform disorder (*n*=15), and schizotypal personality disorder (*n*=33) 19 years following initial hospitalization. Positive and negative symptoms were assessed with the Positive and Negative Symptoms Scale (PANSS), whereas suicidal activity was assessed either through interviews with the participants or available relatives (Fenton et al., 1997). There were no significant differences in suicide, suicide attempts, or suicidal ideation between diagnostic groups; however among those diagnosed with schizophrenia, significantly more patients diagnosed with the paranoid subtype (12%), in comparison to the hebephrenic (0%) or undifferentiated subtype (4%) had completed suicide at the 19 year follow-up ($\chi 2=7.63$, df=2, p=0.02). In a related vein, greater severity of suspiciousness and delusions was associated with suicide risk across diagnoses (Fenton et al., 1997).

Given this study addressed similarities and differences in symptoms and suicidal activity both between psychotic disorders and between subtypes of schizophrenia over an average of 19 years, the relationship identified between more severe delusions and increased suicide risk in general appears well-founded. Because the paranoid subtype of schizophrenia, which by definition is absent of negative or deficit symptoms, was related to increased incidence of suicide, it is possible more severe persecutory or paranoid delusions were experienced by those with paranoid schizophrenia, rather than those in the other subtypes and diagnostic categories that could include negative symptoms. One limitation to these conclusions, however, is that severity of delusions was only assessed retrospectively at two time periods (initial hospitalization and at the 19 year follow-up). Therefore chronicity, or persistence of delusions was not specified, meaning the relationship between severity of delusions and increased suicide risk may be

reflective of increased delusions at one of the two time periods, rather than continuously severe delusions. One would expect this increase at initial hospitalization, as symptoms are likely more acute when individuals require psychiatric hospitalization; however, as previously mentioned, suicide risk has also been identified as being higher just before and immediately following hospitalization. The relationship between severe delusions and suicide completion, particularly if the completion occurred soon after initial hospitalization, may then be inflated in this study.

If severity of delusions at the 19 year follow-up had increased from earlier years, however, it is possible the relationship between suicide and delusions was influenced by other situational factors, such as a recent loss, which has also been highly related to increased suicide risk across diagnoses. This specification of transience vs. persistence is important because increases in delusions have been significantly associated with higher risk for suicide in those with schizophrenia (Lippi et al., 2009; Pompili et al., 2007), though the relationship between presence of delusions and suicide risk, as previously mentioned, varies more widely. An increase in severity of delusions may indicate an increase in psychotic symptoms in general, which may be accompanied by either a subsequent or preceding decline in occupational and community functioning, increased fear of further mental disintegration and loss of control, and potentially, increased suicide risk.

In reference to persistent delusions, particular subtypes of schizophrenia may experience pervasive thought disorders that maintain more consistent delusional beliefs than other psychotic disorders. Individuals with more formal subtypes may endorse more emotional commitment to, or belief in, their delusions if they provide an explanation or external cause that allows individuals to avoid feeling responsible for their unraveling psychological state. Therefore, it may be economical to maintain a fixed delusion with this effect, such as a persecutory or

grandiose delusion, particularly if doing so may protect individuals from decreased self-esteem, self-confidence, and ultimately, risk for suicide. In their 20 year follow-up study of suicide risk factors for individuals with schizophrenia, Lippi et al. (2009) found those without a formal thought disorder had high numbers of lifetime suicide attempts, scored higher on the Beck Hopelessness Scale, and higher on the Calgary Depression Scale for Schizophrenia. However, of their small sample size (n=10), only half (n=5) of the patients displayed a chronic, formal thought disorder, and therefore generalizations from this study may not be representative of valid relationships between thought disorder and suicide risk in the actual population.

Lippi et al. (2009) also addressed delusions at the 20-year follow-up and at several time periods between initial hospitalization with the Positive and Negative Symptoms Scale (PANSS). Seven of the 10 living patients endorsed suffering from delusions at the 20-year follow-up; however five of these seven endorsed experiencing frequent severe delusions over the past 20 years. All three subjects who completed suicide had reportedly experienced severe delusions before and at the time of suicide, two of whom reported no treatment response or remission of delusions during the twenty-year period. However, individuals who reported more mild delusions over time had higher hopelessness and depression scores than those with moderate or severe delusions. Those with current persecutory delusions had higher hopelessness scores, and those with frequent persecutory delusions had higher hopelessness scores, depression scores, and suicide attempts.

This study's small sample size renders conclusions regarding suicide risk, delusions, and thought disorder in those with schizophrenia difficult to make. However, the opposite relationship indicated between a thought disorder and low suicide risk, and delusions and high suicide risk, runs counter to suggestions that delusions may serve as an organizing, possibly

protective reaction to mental disorganization that comes with a thought disorder. It is important to note that given the small sample, it is likely those with a thought disorder (*n*=5) also experienced delusions (*n*=7), as these categories were not mutually exclusive. Therefore the increased hopelessness and depression scores associated with mild and persecutory delusions, rather than moderate or severe delusions, when a thought disorder was not present, is counterintuitive. It would be expected that if suicide risk is lower in those with a thought disorder, hopelessness and depression would be as well, given the relationship between hopelessness, depression, and suicide has been highly agreed upon in the literature. The fact that those with severe and frequent persecutory delusions had high hopelessness and depression sores as well, though with higher risk for suicide, may indicate severity and type of delusion may be more strongly related to suicide risk than a thought disorder.

In light of the argument Fenton et al. (1997) proposed regarding the increased incidence of suicide in patients with the paranoid subtype of schizophrenia, rather than the undifferentiated or hebephrenic type, perhaps thought disorders manifest differently between subtypes of schizophrenia. For example, in their review of risk factors for suicide in schizophrenia, Pompili et al. (2007) substantiated one, but refuted another of Lippi et al.'s (2009) assertions; they identified paranoid delusions and a thought disorder as independently relating to high risk for suicide. This discussion of differential suicide risks for delusions, thought disorders, and between subtypes of schizophrenia is particularly relevant for the specification of treatments and suicide interventions for schizophrenia, as the new DSM-5 has eliminated these subtypes and made new specifications for the prominence of affective symptoms in schizoaffective disorder. As previously mentioned, if these subtypes seem to vary in their relationship to symptomology, prognosis, and suicide, perhaps this attempt to simplify and differentiate the diagnosis of

schizophrenia from other "spectrum" disorders will pose additional complications and limitations to identifying valid suicide risk factors, treatment and prevention interventions for this population.

Persecutory Delusions

Given much of the literature on delusions in schizophrenia has mentioned persecutory delusions and the paranoid type of schizophrenia, it is important to explore the nature of persecutory delusions and their relationship to other factors that have been associated with suicide risk for individuals with this diagnosis. Persecutory delusions have been identified as one of the most commonly held types of delusional beliefs (Garety, Everitt, & Hemsley, 1988; Jorgensen & Jensen, 1994), and their presence has been identified as a predictor of hospital admission (Castle, Phelan, Wessely, & Murray, 1994). These associations are not surprising, given persecutory delusions have been included in many of the previously mentioned studies on delusions in relation to hospitalization and functioning in general. Specific emotional factors that have been significantly associated with persecutory delusions are anxiety, specifically meta-worry, and negative affect (Applebaum, Robbins, & Roth, 1999; Freeman & Garety, 1999; Freeman et al, 2007).

Although suicide risk in relation to persecutory delusions will be discussed later, it is important to note here that fear of mental disintegration and losing control of one's mind, which has been associated with increased risk for suicide in individuals with schizophrenia, may be similar to meta-worry. However, negative affect is by definition, absent from paranoid schizophrenia, the subtype which is most often affiliated with persecutory delusions. Paranoid schizophrenia and negative affect have been identified as having opposite relationships to suicide risk for those with schizophrenia, such that the former is often related to higher risk, whereas

negative affect is more often related to lower risk. These conflicting indirect associations are therefore important to explore in more depth and will be further elaborated upon in following sections.

To return to former concerns regarding thought disorders, development and maintenance of delusions, several studies have explored anxiety, one of the factors often affiliated with persecutory delusions, in relation to paranoid thought suppression (Clark, Winton, & Thyn, 1993; Jones & Fernyhough, 2008; Lavy & Van den Hout, 1990; Wegner, Schneider, Carter, & White, 1987). For example, in their study of individuals with schizophrenia and healthy controls with delusional thoughts, Clark et al. (1993) found those who attempted to suppress them and experienced subsequent anxiety also experienced an increase in persecutory delusion-like beliefs. Similarly, Jones and Fernyhough (2008) conducted a study with a non-clinical sample (*N*=183) who endorsed persecutory delusion-like beliefs (PDLB's), and found thought suppression was positively related to PDLB'S only when anxiety was high. The researchers proposed this increase in PDLB's was due to a to a "post-suppression rebound effect," which occurred when individuals attempted to suppress their thoughts and simultaneously experienced a high level of anxiety. They characterized this effect as an increase in intrusiveness of and accessibility to these thoughts, and suggested the anxiety some experienced may have been due to a fear of the uncontrollability and dangerousness of their intrusive, persecutory thoughts. Given the non-clinical nature of their sample, it is likely such thought suppression was in reaction to fears of experiencing mental disorganization that may be indicative of a thought disorder, and their awareness of their changing cognitions likely produced significant worry regarding what such changes would mean about them.

Although Jones and Fernyhough (2008) predicted high negative affect would also produce increases in PDLB's following thought suppression, they found no such relationship. In light of the research citing anxiety, specifically meta-worry, and negative affect as relating to presence of persecutory delusions, these studies highlight several details to consider in relation to schizophrenia and suicide. First, Jones and Fernyhough's (2008) assertion that fear of uncontrollability and dangerousness of thoughts may have contributed to individuals feeling an anxious need to suppress persecutory delusion-like beliefs may lend credence to the former suggestion that fear of mental disintegration may be an aspect of such anxiety. As such, it is possible the increase in persecutory delusions that results from their attempted suppression may be related to increased suicide risk in those with schizophrenia, as such fears as well as increases in delusions in general have been independently related to increased suicide risk for this population. Furthermore, the lack of relationship Jones and Fernyhough (2008) found between negative affect and increased PDLB's following suppression may support this suggestion, as those diagnosed with the paranoid type of schizophrenia (which is cited as having high incidence of suicide) would not be expected to experience negative affect as a prominent symptom.

Schizophrenia

As delusions in general appear to affect individuals' functioning differently between diagnoses, the influence persecutory delusions may have on cognitive, emotional, and social functioning specifically in individuals with schizophrenia is important to specify. A particular cognitive deficit that appears to be common in schizophrenia and may be implicated in persecutory delusions is theory of mind (TOM), or "the ability to accurately attribute mental states to oneself and others, in order to explain and predict behavior" (Harrington, Langdon, Siegert, & McClure, 2005, p.885). Given persecutory delusions may represent individuals'

attempts to attribute the source of their suffering to external forces, rather than feeling personally responsible for their psychological distress, deficits in theory of mind that involve confusion between personal thoughts and feelings and those of others may be related to the maintenance of such delusions.

In their study with 25 individuals with either paranoid or non-paranoid schizophrenia and 38 controls, Harrington et al. (2005) administered a variety of TOM tasks to determine how persecutory delusions in those with schizophrenia may be related to TOM deficits. Only individuals with schizophrenia, whether classified into paranoid or non-paranoid, and persecutory delusions displayed deficits on verbal TOM tasks, though there were no significant differences between individuals with schizophrenia or healthy controls on non-verbal TOM tasks (Harrington et al., 2005). Therefore, the presence of persecutory delusions seems to contribute to increased TOM difficulties for schizophrenia in general, regardless of subtype. Interestingly, although individuals diagnosed with paranoid schizophrenia reported more persecutory delusions than other delusions, there was no significant difference in delusion prevalence between paranoid and non-paranoid types. However, the severity of persecutory delusions was related to length of illness (Harrington et al., 2005).

Several important points can be made regarding these results. First, it appears not all individuals with paranoid schizophrenia have persecutory delusions, and persecutory delusions are not exclusive to the paranoid type. Therefore it appears different subtypes of schizophrenia may share similar risks for theory of mind deficits if they also experience persecutory delusions. However, given those in this study with paranoid schizophrenia endorsed having more persecutory delusions than other delusions, it is possible those with paranoid schizophrenia could have a higher potential for developing theory of mind deficits. Given those with paranoid

schizophrenia and those with persecutory delusions share similar beliefs about the negative intentions of others, this suggested increased potential for misattributing personal negative thoughts as those of others may be more likely. Second, if those with more severe persecutory delusions also have a more chronic course of schizophrenia, perhaps theory of mind deficits have a significant impact on length of illness. This suggestion may support the possibility that a chronic thought disorder in those with schizophrenia, and continued attempts to suppress intrusive, anxiety-provoking, threatening thoughts could contribute to the maintenance of persecutory delusions, therefore prolonging the course of the illness.

Similar to the course of illness, prognosis and recovery are important aspects to address in reference to persecutory delusions, as the conflicting findings regarding how the presence and severity of delusions impacts functioning in those with schizophrenia may indicate particular delusions have varying relationships to prognosis and outcome. In their attempt to understand how different delusions impact recovery, Harrow et al. (2008) explored the risk and preventative factors associated with persecutory and non-persecutory delusions in individuals from their Chicago Follow-Up Study with schizophrenia, bipolar disorder, or a major depressive disorder over 20 years. At the two-year follow-up, 73% of those who had no delusions experienced periods of recovery; as compared to 27% of those with persecutory delusions and 20% of those with non-persecutory delusions. Recovery was defined as a significant decrease or absence of illness symptoms, including delusions (Harrow, Jobe, & Astrachen-Fletcher, 2008). The researchers suggest although the presence of either delusion may indicate greater vulnerability to subsequent psychopathology and increased chances for a poorer outcome, presence of persecutory delusions may predict better outcome or subsequent recovery years later.

An important limitation of this study, however, is the researchers did not address differences in recovery rates of individuals with different diagnoses. As has been previously discussed, delusions may be more prominent in, and have differential effects on functioning between diagnostic groups. Even within the diagnosis of schizophrenia, as Harrington et al. (2005) found, individuals with paranoid schizophrenia endorsed more persecutory delusions than other delusional types. Although it is important to recognize how persecutory delusions may be related to recovery across diagnoses, it is necessary to address the possible confounding variables between diagnoses that may contribute to generalized and possibly misrepresentative recovery rates.

Additional results from this study, however, may help to clarify how these rates could have been influenced by other mediating factors; anxiety, poor self-esteem, and external stress were identified as relating to subsequent persecutory delusions, and predictive of overall delusional activity many years later (Harrow, Hansford & Astrachen-Fletcher, 2008). These results are particularly interesting in light of prior research that identified anxiety, specifically meta-worry, and negative affect, as variables related to persecutory delusions. Jones and Fernyhough's (2008) study on theory of mind and persecutory delusion-like beliefs identified anxiety related to fear of mental disorganization as contributing to increases in these beliefs, and therefore maintenance of them over time. If individuals experience stress surrounding feeling out of control of their thoughts, it is possible they will also experience decreased self-esteem, as a subsequent increase in such beliefs following failed attempts to control them may be perceived as a personal incompetence. Given decreases in self-esteem and fear of mental disintegration have been closely associated with suicide risk for individuals with schizophrenia, it is possible the maintenance and severity of persecutory delusions may pose similar risks for this population.

Self-esteem and Schizophrenia

Self-esteem may be a particularly important factor related to persecutory delusions, as individuals may derive self-esteem from a number of areas that are often compromised with the development of schizophrenia, including occupational and social functioning, educational attainment, cognition, and a stable sense of self. However, the suggestion that delusions, particularly persecutory delusions, may distort the reality of individuals' compromised state and allow them to redirect resentment of declining capacities towards external forces, may indicate some self-esteem is able to be preserved. Following this notion, Valiente et al. (2011) used overt, self-report measures (the self-worth subscale of the World Assumption Scale; Janoff-Bulman, 1989) and the self-acceptance scale of the Scales of Psychological Well-Being (Ryff & Keyes, 1995), and an association task as a covert measure to assess implicit and explicit self-esteem in paranoid patients, depressed patients, and healthy controls. Depressed patients endorsed significantly lower explicit self-esteem scores than paranoid patients or healthy controls, though those with persecutory delusions had significantly lower implicit self-esteem than the controls. Low implicit self-esteem in this group was indicated by individuals associating negative attributes to themselves more quickly than positive attributes, which the researchers suggested was indicative of an implicit negative self-bias (low implicit self-esteem; Valiente et al., 2011).

The fact that those with persecutory delusions endorsed high explicit self-esteem may suggest they are putting significant effort into portraying a positive self-regard. Similar to the anxiety and worry that comes with feeling the need to suppress persecutory beliefs, these individuals may experience significant stress from remaining in a constant state of alertness and self-deception in order to maintain this positive self-image. It is possible this strategy is influenced not only by the fear of being unable to control their thoughts and reactions to those

thoughts, but an actual paranoid fear of being persecuted if they appear weak or vulnerable, indicating a possibly stronger belief in the delusion. By appearing confident to others, paranoid individuals with persecutory delusions may feel more protected, suggesting persecutory delusions may have as a self-serving bias.

Paranoid patients may truly believe others have malicious intentions towards them, which has the potential to negatively impact self-esteem; however, when combined with worries related to deteriorating cognition and personal competence, the mounting threats to their self-esteem may become too overwhelming to consciously sustain. Therefore the persecutory delusions may offer individuals partial relief from being painfully aware of their crumbling internal self-esteem (Candido & Romney, 1990; Moritz, Werner, & von Calani, 2006); by shifting their attention to protecting themselves from others, they attempt to partially avoid experiencing the ever-increasing anxiety and decreased sense of competence resulting from unsuccessfully suppressing their paranoid thoughts.

Following this idea, Morris et al. (2011) explored differences in shame, depression, grandiose delusions, parental care, and threats of alienation and insecurity between patients with schizophrenia or paranoid schizophrenia (47%), schizoaffective disorder (11%), bipolar disorder (8%), psychotic illness (3%), psychotic depression (3%), or an unspecified diagnosis (27%) with "poor-me" (PM) or "bad-me" (BM) persecutory delusions. These two types of persecutory delusions were originally proposed by Trower and Chadwick, who suggested those with PM paranoia believe their perceived persecution is unfair and unjust, whereas those with BM paranoia believe they somehow deserve the persecution (as cited by Morris, Milner, Trower, & Peters, 2011). BM patients scored higher on shame, depression, parental overprotection and low self-esteem, but lower on grandiose delusions than PM patients.

As mentioned in prior studies with mixed diagnostic groups, it is difficult to draw conclusions regarding the specific associations between persecutory delusions and these factors for schizophrenia alone, as the influence from other disorders, particularly those with a stronger affective component, may have influenced scores on measures such as depression. Although those with schizophrenia or paranoid schizophrenia comprised almost half the sample, the other half consisted of disorders with stronger affective components. Also, the percentage of individuals with either type of persecutory delusion within each diagnostic category was not specified, making drawing conclusions about persecutory delusions in schizophrenia even more difficult.

Nonetheless, when compared to the previous study which found persecutory delusions were related to low implicit self-esteem and high explicit self-esteem, Morris et al.'s (2011) findings may suggest addressing individuals' experience of their delusions and the meaning they make of them may further explain how persecutory delusions may either protect or threaten individuals' self-esteem, felt sense of shame, and potential for depression in response to their delusions. If indeed those with BM persecutory delusions differ as starkly from those with PM persecutory delusions on these factors as this study indicates, addressing patients' perceptions of themselves and others through implicit, explicit, subjective, and objective means may offer further clarification of how persecutory delusions pose additional risks to or offer potential protection from further mental deterioration and suicide in individuals with schizophrenia.

Suicide and Schizophrenia

Several factors have made studying suicide risk in those with persecutory delusions and schizophrenia particularly difficult. First, though lifetime rates of suicide in individuals with schizophrenia are higher than other psychiatric diagnoses, suicide is still a rare occurrence within

this diagnosis. Narrowing research to persecutory delusions, rather than delusions in general, decreases the number of people who qualify as meeting all three criteria. When additional factors are considered in the attempt to better clarify how the relationship between persecutory delusions and established suicide risk factors for schizophrenia may interact, sample sizes continue to decrease, and significance testing becomes less possible.

Therefore in the literature thus far, most associations between persecutory delusions and suicide in individuals with schizophrenia have consisted of indirect associations between persecutory delusions, psychosocial factors, and suicide. For example, depression and low self-esteem in the presence of delusions has been associated with increased risk for suicide in individuals with schizophrenia. Given these factors have been found in individuals with schizophrenia experiencing persecutory delusions as well, it is possible persecutory delusions may also be associated with increased suicide risk. In their retrospective study of 14 patients with schizophrenia. Lippi et al. (2009) also found frequent persecutory delusions predicted more hopelessness, depression, and suicide attempts. Pompili et al. (2007) found inpatients with paranoid delusions associated with the paranoid type of schizophrenia were more likely to complete suicide, though as stated previously, risk of suicide was more strongly associated with affective symptoms such as agitation and awareness of impairment in functioning than with core psychotic symptoms.

These results are particularly important for understanding how persecutory delusions may differentially influence suicide risk between subtypes of schizophrenia, as well as between psychiatric diagnoses. The stronger affiliation between agitation or awareness of impairment in functioning and suicide risk, rather than psychotic symptoms such as delusions and suicide risk, may indicate these other factors are more important to address when assessing suicide potential

for individuals with paranoid schizophrenia. However, in the absence of these factors, persecutory delusions may take precedence in suicide assessment. Given prior suggestions stating individuals with persecutory delusions may not be as aware of their impairments in functioning, as their reality may be somewhat distorted by their delusion, it would follow that such awareness would be more strongly associated with suicide than persecutory delusions. However, if persecutory delusions are also related to anxiety, specifically meta-worry and fear of further mental disintegration, the close affiliation between agitation and suicide risk in those with paranoid schizophrenia may support prior hypotheses that persecutory delusions may be an attempt to curb this anxiety and agitation, though perhaps insufficiently, and potentially results in increased risk for suicide due to phenomena such as the "post-suppression rebound effect" identified by Jones and Fernyhough (2008).

Pompili et al. (2007) also assessed paranoid behavior in their sample, including acting on delusions by displaying hostility, such as during involuntary admission to a hospital. Although increases in such behavior could be seen as projective defense strategies, attempts to dissociate themselves from the shame that may come with their deteriorating mental state by shifting the locus of their distress onto others, such increases were considered acute signs of suicidal danger associated with long-term suicide risk (Pompili et al., 2007). It is necessary, however, to reconsider this assumption, as such projection of violence onto someone else may have kept some individuals from becoming violent with themselves, namely through suicide. Pompili et al.'s (2007) suggestion that this behavior may have several meanings supports the prior suggestion that individuals' perspectives, both implicit and explicit, are important to address. If such outward violence did result in the individual avoiding self-directed violence, the self-serving bias several studies proposed those with persecutory delusions enact to actually protect

their fragile self-esteem (Candido & Romney, 1990; Moritz, Werner, & von Calani, 2006) may be valid; however, the increased risk for suicide occasionally associated with persecutory delusions in individuals with schizophrenia (Lippi et al., 2009; Pompili et al., 2007) seems to suggest these defenses may not be sufficient to protect the individual from suicide.

It is important to explore the possibly protective power persecutory delusions and paranoia may have in more depth, given prior suggestions such factors of schizophrenia may indicate a self-serving bias to protect against a fragile internal self-esteem. Fialko et al. (2006) conducted the Psychological Prevention of Relapse in Psychosis (PRP) trial to investigate factors associated with suicidal ideation in psychosis. Preoccupation with delusions was not associated with suicidal ideation, though positive symptom distress, depressed mood, anxiety, low self-esteem, negative illness perception, and negative beliefs about self and others was related to suicidal thoughts. These findings are particularly intriguing, given previous research has associated persecutory delusions with low self-esteem, negative self-beliefs, anxiety, and depression, which were all (except persecutory delusions) consistently, independently related to greater risk for suicidal ideation, attempts, and completion.

It is possible not all individuals with persecutory delusions, therefore, experience anxiety, depression, negative beliefs about themselves, or have a negative illness perception, as previously proposed. Perhaps some individuals with schizophrenia develop a more external locus of control and develop persecutory delusions as part of their shift away from the shame and low self-esteem that would come with being more aware of, and responsible for the detrimental impacts of their illness. This shift, therefore, may decrease their risk for suicide if their persecutory delusions enable them to successfully avoid experiencing all these factors.

A final study to consider in this regard in Freeman et al.'s (2007) assessment of safety behaviors (acting with the intention of reducing a perceived threat), acting on delusions, depression, and psychotic symptoms in 100 patients diagnosed with persecutory delusions. Greater use of safety behaviors was associated with higher levels of stress, a history of violence or suicide attempts, and acting on delusions. Such action-oriented behavior may indicate these individuals experienced a more internal locus of control, feeling as though they were capable, and responsible for changing their situation, and therefore may have experienced greater stress when they were unsuccessful. This internal sense of responsibility, where it can positively foster a sense of agency and control, can also create pressure on individuals to regain control of their thoughts and return to their previous level of functioning, despite how distant of a possibility that may be. Therefore the increased violence, when thwarted, may be perceived by an individual with schizophrenia as another unsuccessful attempt to be an effective, active agent of his or her life, and may result in increased risk for suicide due to increased hopelessness and low self-esteem from repeated confronting of his or her deteriorating mental capacities.

Empirical Data and Existential Theory

Much of the research on suicide, persecutory delusions and schizophrenia presented thus far has focused predominately on empirical assessment of symptoms through statistical analysis of potential relationships between psychosocial factors, using scientific hypotheses to direct and explain the associations that are found for their particular sample. Although many of these studies propose important implications for assessment, treatment, and prevention, what is often missing in such considerations is an understanding, or even an exploration of how individuals are actually experiencing the interactions of these factors. Also, few empirical studies are able to explain the reason for relationships between risk factors; rather than conducting research to

better understand the experience of schizophrenia, persecutory delusions, or suicidality as a whole, researchers tend to seek clarification of quantifiable parts of those experiences and make subsequent postulations about their clinical meaning.

This approach presents a limited view of normal and pathological human experiences, as the meaning people make of the various aspects of their world, which is more valid than any assumption a researcher could make about how well empirical relationships represent actual experience, is often not considered a reliable factor. However, it is possible attempting to understand the nature of suicide, persecutory delusions, and schizophrenia from a theoretical framework based on the meaning these experiences hold for individuals, as is the focus of existential psychology, may benefit empirical research by providing perspectives that validly represent the effects these struggles have on individuals' actual lives. In support of this approach, a prominent existential philosopher, Jean-Paul Sartre, stated descriptive methods, such as those in most quantitative research studies, are not sufficient because they do not address the experience of individuals within their world (Jones, 2001).

Therefore, combining empirical data with a theoretical understanding of schizophrenia, delusions, and suicide may offer a more comprehensive approach to making meaningful conclusions about the conflicting quantitative relationships that have been identified thus far. Existential psychology involves understanding how humans come to terms with the inescapable nature of death, suffering, and change, and navigate through the unpredictable, uncontrollable circumstances of life to make meaning of their world, their connection to others, and themselves. These issues seem particularly pertinent to the experience of contemplating suicide and developing a severe psychological disorder such as schizophrenia, with thoughts such as persecutory delusions that shatter world assumptions. Various existential perspectives on suicide

and psychosis exist, therefore, here the focus will be on those that specifically discuss suicide, schizophrenia, and persecutory delusions, with the intention of cultivating a comprehensive understanding of the lived experience of these aspects of psychological struggle.

Existential Perspectives

Several existential philosophers and psychologists discuss the inevitability of suffering as part of the human condition. Suffering is seen as a paradox; despite the inescapable nature of suffering, humans attempt to avoid it at all costs and only end up suffering more at our own hand (Gruba-McCallister & Levington, 1995). Kierkegaard differentiated between two types of suffering: one leads to prolonged suffering, despair, and hopelessness through resistance, and the other to transcendence and growth. Kierkegaard stated, "Resistance to suffering is rooted in our desire to avoid loss and to exercise absolute control over our lives" (as cited in Gruba-McCallister & Levington, 1995, p.100). This statement reflects the freedom we have to choose between "dying to self," accepting the ambiguous, uncontrollable, and temporal nature of our existence and subsequently experiencing life as an authentic, meaningful process, or despairing and becoming "ensnared in a seemingly unalterable cycle of self-defeat" (Gruba-McCallister & Levington,1995, p.100).

Heidegger described the anxiety involved with this choice is rooted in the recognition of the inevitability of nothingness that is death, and defines a mental disorder as "contingent upon a basically rigid, extreme process of human experience rooted in intolerance of ambiguity" (as cited in Gruba-McCallister & Levington, 1995, p.101). Nordentoft, (as cited in Gruba-McCallister & Levington, 1995, p.101) supported the notion that despair is rooted in an intolerance of ambiguity. Despair and mental disorder, therefore, may represent a difficulty addressing what Sartre called the "fundamental project" of committing to living out existence as

a process. Kierkegaard (as cited in Gruba-McCallister & Levington, 1995) differentiates between different forms of despair: that of weakness and that of defiance. Despair of weakness is defined as "extreme efforts to evade freedom by failing to choose" (p.108). Despair of defiance is "the expression of an extreme attempt to become autonomous and ungrounded in any higher power," which leads to confusion about what we can and cannot control and the perpetuation of a "sickness unto death" (Gruba-McCallister & Levington, 1995, p.108).

Within this form of despair, there is an active and passive form of defiance. The passive form of defiance is characterized by a clinging to one's suffering; taking a bitter, stubborn attitude toward one's struggles; and refusing all attempts at help (Gruba-McCallister & Levington, 1995). Within the active or "demonic" form, the self becomes its own god but despairs when it realizes it is only reigning over emptiness. To clarify, Kierkegaard stated, "a great deal of evil inflicted by one person upon another is an expression of the perpetrator's own anguish and misery" (as cited in Gruba-McCallister & Levington, 1995, p.106). It may be possible, then, that persecutory delusions are a form of this active defiance, inflicting evil on others to protect the individual against his or her own anguish. Given low internal self-esteem, anxiety, a "bad-me" form of paranoia, and an external locus of control have been associated with persecutory delusions in schizophrenia and poorer prognosis, including a higher suicide risk, perhaps persecutory delusions are an attempt to reclaim control over a life that seems completely uncontrollable.

The active form of defiant despair, rather than the choice to "die to self" and accept the ambiguity of life, has been discussed in more detail because it seems to relate most closely to the creation and perpetuation of persecutory delusions in schizophrenia and the ultimate choice to suicide. Kierkegaard explains this fear of "dying to self" involves the fear of trusting the

unpredictable nature of suffering and the fear of letting go of our desire to control our lives, including when and how we suffer. Such fears may be related to the fears individuals with schizophrenia experience as their world becomes more chaotic; developing a fixed delusion may offer a sense of consistency and understanding that provides a predictable explanation for their suffering (Gruba-McCallister & Levington, 1995). This could be a potential explanation for the organization and perpetuation of persecutory delusions: the persecutory suffering is that individual's, he or she chooses to perpetuate the belief that he or she is persecuted to avoid addressing his or her own fragility and fallibility. The individual may feel safe in the familiarity of the belief and hold fast to it even though it causes suffering, anxiety, fear. How this sense of safety relates to risk for suicide, which could be understood as the ultimate act of despair, may need further exploration.

Levington and Gruba-McCallister (1993) stated that in contemplating suicide individuals must consider the relationship between life and death, including whether choosing and causing one's own death is somehow life-affirming (Levington & Gruba-McCallister, 1993). Citing Camus, they described the choice to suicide as "a natural response to the absurdity of human existence…to being alive and yet not knowing with any absolute certainty that life and its struggles are meaningful" (Levington & Gruba-McCallister, 1993, p. 78). They mention self-sacrifice for an important cause as an example of choosing death and promoting transcendence, rather than out of despair from failure to contend with the struggle of life. This point highlights the isolated, individual nature of suicide: what is meaningful in life, or death for some, may not be for others. The individual still experiences what Heidegger (1968) cited as the ontological givens of existence, the universal struggles and limitations with which all humans must contend. Therefore, the choice to suicide involves a balancing of both shared and individual experiences

to come to a personal conclusion. Delusions, then, may represent a personally interpreted and experienced perception of the world, others, and oneself that contributes to finding alternative meaning through suicide.

Surviving a suicide attempt is often considered a "boundary experience" that may offer an opportunity for growth and a new appreciation of life, or the revisiting of unresolved issues and the realization of another failure, leading to repeated contemplation or ultimately another attempt (Levington & Gruba-Mccallister, 1993, pp. 76-77). In differentiating between the experience of suicidal ideation and survival of a suicide attempt, Levington and Gruba-Mccallister (1993) stated the role of will is paramount: one contemplates the negation of life, whereas the other negates it, "shatters the experience of living as a continuous process," and is then left to deal with the negated life (Levington & Gruba-McCallister, 1993, p. 76).

Binswanger focused on the aspect of schizophrenia Bleuler coined "autism," a disruption in the Husserlian "presumption that experience will continue in the same style as it has in past experience" (as cited in Spiegelberg, 1972, p.226). He cited four characteristics of this autism in relation to existential thought. The first is a breaking apart of consistency of experience that leads to attempts to interfere with this disruption, and inevitable failure in these attempts. The second aspect is that experience is split into rigid alternatives, with the third being attempts to deny undesirable alternatives. The individual eventually becomes overwhelmed by the tensions created by these fruitless efforts, resigns, and withdraws into a delusional, isolated world (Spiegelberg, 1972). The individual's futile efforts to gain control of the inevitable changes and ambiguous suffering in experience are met with anxiety and eventual despair, perhaps a defiant despair with the development of rigid delusional beliefs that structure the individual's isolated experience and protect the individual from future failures and disruption.

Jaspers explained the development of delusions as "the liberation of the individual from the unbearable nature of reality seen as uncanny" (as cited in Jacobs, 1980, p. 557). A stressful occurrence, or "transitional event" (Jacobs, 1980, p. 557) may be experienced as the culmination of long exposure to environmental and personal conflict, possibly between reality and the person's desires, and the delusion is created as a resolution to the perplexity, fear, strangeness, and panic that would otherwise become overwhelming. The individual searches for any consistent idea to which he or she can hold, regardless of how senseless or illogical, and experiences a calming, strengthening effect from this sense of understanding. Sartre states the choice we make "in-the-face-of-the-world" combines "pre-logical synthesis and provides a center of reference for limitless meanings" (Jones, 2001, p. 369). Jaspers stated this understanding is experienced as actual awareness of true experience, rather than confusion or a change in thought process. The process is reverse of that of normal thought processing: the individual gains knowledge through perceiving a new meaning that in turn influences all future perception and thinking to strengthen and perpetuate the delusion as an "incorrigible truth" (Jacobs, 1980, pp. 556-557).

Jaspers's understanding of delusions as a resolution of conflict and attempt to "liberate" the self from the ambiguous nature of reality echoes the aforementioned choice to despair and defy our existence as uncontrollable and unpredictable. Persecutory delusions in particular, may offer the person greater liberation from the fear of his or her own uncanny existence; the threat is switched from inside the individual to others, allowing the individual to absolve him or herself of responsibility for any discomfort he or she experiences. The danger in the creation of this delusion lies in the potential for the perceived threat to also become overwhelming. If the individual's sense of self is disrupted in this process and the delusion serves as a protective factor

against this fragmented, fragile self, it is possible the perceived persecution also becomes unbearable, and the individual is left feeling completely unable to endure the reality they have adopted or the one they have been attempting to evade. Perhaps this is one circumstance that contributes to ultimate hopelessness and suicidality in those with schizophrenia experiencing persecutory delusions.

Keks and D'Souza (2003) described an episode of psychosis as "a profound assault on one's personality, identity, self-esteem, and confidence" (p. 170). They cited spirituality as a potential organizing agent in individuals' attempts to make meaning out of their loss of previous functioning during the recovery phase; however they also noted spirituality can become intertwined into individuals' delusions and serve as an added source of persecution, stress and pain. Similarly to Jaspers, this notion proposed by Keks and D'Souza (2003) suggested such delusions may be created in response to increased awareness of the chaos that is occurring in individuals' inner world. Turning to external sources as the cause of one's suffering, whether to a spiritual or interpersonal source, may be an attempt to relieve one's self of the guilt or fear that has developed as a result of this "assault" on the person's sense of self, continuity of his or her existence, and his or her place in the world. Where turning to religion and creating a persecutory delusion may have the intention of organizing and making meaning out of one's inner disorganization, both may become additional sources of stress as the person's cognitions and judgment continue to be disrupted by psychotic disorganization.

In his analysis of the case of Ellen West, an individual with a severe eating disorder who ultimately committed suicide, Binswanger (1963) referred to struggles between the three spheres involved with being-in-the-world: Umwelt, Mitwelt, and Eigenwelt. In Ellen's case, Binswanger believed she had closed her existence off from Umwelt and Mitwelt, the experience of the

greater world and her relationship to others within that world, and had become completely involved with Eigenwelt, her experience of herself. In fighting her natural dependence on others and the greater world for meaning, her efforts to be in complete control ultimately led her to become overly dependent on others, rather than liberated (Binswanger, 1963). Her future was not determined by past actions or the world of "practical action," but rather was a perpetuation of a world of fantasy she attempted to sustain. This defying of the painful reality of her experience seems similar to the process Jaspers stated is involved with developing delusions. Binswanger (1963) stated "when an existence becomes dominated by an inauthentic future, the existence is doomed to failure and the individual to disappointment and depression" (p. 298). This failure, when paired with no connection to others, the greater world, or a perceived lack of options, may be a driving force behind the decision to commit suicide.

The Present Study

The purpose of the present study, therefore, was to address several aspects of the existing literature on suicide that remain separate and controversial in their conclusions. First and foremost, I addressed how the presence of persecutory delusions in individuals diagnosed with schizophrenia or schizoaffective disorder may be related to suicidality, inclusive of suicidal ideation, suicide attempts, and suicide completion. As much of the existing literature identified differences between momentary relationships between these two variables and those that may develop over time, the present research examines the relationship from both perspectives. In the attempt to better understand the results of this preliminary inquiry, factors that have been previously identified as relating to suicide risk and prevalence, presence or changes in persecutory delusions in this population (self-esteem and locus of control) were addressed.

To bridge the gap between research and theory, all results and conclusions were considered through an existential lens. This theory's focus on the importance of perceived control, sense of self as an effective agent, and meaning-making is particularly relevant to the inherent struggles empirical findings and psychological theories have identified as pertinent to individuals with schizophrenia and/or persecutory delusions contemplating suicide. By examining each of these factors through this perspective, it is hoped further clarification of the meaning-making process individuals diagnosed with a schizophrenia spectrum disorder may engage in when contemplating suicide will be possible. Such clarification may contribute to the success of future endeavors to address particular aspects of individuals' experience of persecutory delusions in an effort to better mediate suicide potential in this high-risk population.

Chapter 3: Research Methods

Sample

The data used for this project was archival data from The Chicago Follow-Up Study (CFUS). CFUS is a prospective study that collected various measures of functioning, course and outcome of illness, and suicidality from individuals at their initial hospitalization in 1975 and in subsequent follow-ups 2, 4 and a half, 7 and a half, 10, 15, and 20 years later (Harrow et al., 2009; Kaplan et al., 2012). Individuals at initial hospitalization had a mean age of 23.3, with 13.2 years of education; 51% were male, 49% female. Data from 90 of these participants meet the inclusion criteria for the present study.

Diagnosis

Patients were diagnosed at initial admission to the hospital using the Research Diagnostic Criterion (RDC; Spitzer, Endicott, & Robins, 1978), based on the Schedule for Affective Disorders and Schizophrenia (SADS; Endicott & Spitzer, 1978), and/or the Schizophrenia State Interview ESSII (Grinker & Harrow, 1987), a tape-recorded, semistructured interview, and admission interviews from the patients' charts. The initial diagnosis was retained throughout each follow-up (Harrow et al., 2009; Kaplan et al., 2012). Due to the low number of individuals diagnosed with schizophrenia who also endorsed persecutory delusions and have a suicide score, self-esteem score, and locus of control score on at least three follow-ups, individuals diagnosed with Schizoaffective Disorder were included in the present study. Despite the differences that may exist between prevalence of delusions and manifestations of the psychosis experienced by individuals with schizophrenia or schizoaffective disorder, for the purposes of this research, including those diagnosed with schizoaffective disorder and persecutory delusions was thought to have the potential to increase the validity of the findings. Given the presence of persecutory

delusions as an aspect of psychosis was being explored in relation to suicidality, those with either psychotic disorder endorsing persecutory delusions seemed to qualify as being representative of how such delusions may relate to suicidality.

Follow-up Assessments

Follow-ups were conducted by trained interviewers who were blind to diagnosis and, after the first wave of follow-ups, were blind to the results of the previous follow-ups. Informed consent was obtained at each assessment (Harrow et al., 2009; Kaplan et al., 2012). For the purpose of this project, data from follow-ups 1-5 was used when conducting analyses on persecutory delusions and schizophrenia, as each of these follow-ups included measures of persecutory delusions and suicidality. Data from follow-ups 1, 2, and 4 (at 2 years, 5 years, and 10 years post initial hospitalization) was used when conducting analyses with locus of control and self-esteem, as each of these follow-ups included measures of locus of control, self-esteem, persecutory delusions, and suicide rating for the sample.

Suicidality

As previously discussed, suicidality is a complex, often disputed construct that is difficult to measure. Intent behind suicidal behavior contributes to constructs such as destructive self-harm and suicidal gestures; however when examining suicidal ideation, suicide attempts, and completions, there seems to be a continuum of severity. If someone qualifies as attempting to suicide, suicidal ideation must also be present. If someone completes a suicide, one must attempt, and to attempt, one must formulate a plan, which requires suicidal ideation. Therefore, measures of suicidal activity were categorized into a 4-point scale delineating absence, ideation, attempt, and completion (Harrow et al., 2009; Kaplan et al., 2012).

Criterion for suicide included a report of suicide on a death certificate from an autopsy report of the National Death Index or a family report of suicide and method of death that increased the likelihood of death, and was coded as a 4 on the 4-point scale. (Harrow et al., 2009; Kaplan et al., 2012). Criterion for an attempted suicide required the patient affirming suicide attempt based on a score of 6 or 7 on the 7-point SADS scale, which was then coded as a 3 on the 4-point scale. A score of 4 or 5 was considered serious suicidal ideation, and was coded as a 2 on the 4-point scale. The distribution of suicide ideation, suicide attempts, and suicide completions does not allow for statistical testing of the separate measures; however, effects of the predictor variables (persecutory delusions, self-esteem, and locus of control) for individuals diagnosed with schizophrenia separately on suicidal ideation, attempts, and completions were tested. Any individual who completed suicide was included in the analyses, despite sometimes not meeting the inclusion criteria of having data in at least three follow-ups.

Delusions

The present research focused on patients' reports of persecutory delusions as prominent on the RDC at initial hospitalization, and the SADS at follow-ups (Harrow et al., 2009; Kaplan et al., 2012). Various types of delusions were endorsed by the sample, but for the purposes of this project, all delusions other than persecutory delusions were not included. Given the project is most concerned with discerning what, if any, relationship exists between persecutory delusions and suicidality over time in individuals with schizophrenia or schizoaffective disorder, any specific relationship that may exist between other delusions and suicidality was not analyzed, and therefore the differentiation between these delusions is not necessary.

Locus of Control

Measures of locus of control (LOC) were taken using a modified version of Rotter's Internal versus External Control of reinforcement Scale (I.E. Scale; Harrow et al., 2009; Rotter, 1966). Rotter's original I.E. scale consists of 23 forced-choice I.E. items and six filler items. The modified I.E. Scale that was used in this research consisted of 11 I.E. items of the original 23 forced –choice items and two filler items. As an example, one of the forced-choice items was "people's misfortunes result from the mistakes they make," versus "many of the unhappy things in people's lives are partly due to bad luck." Higher scores indicate a greater degree of externality and lower scores indicate a more internal locus of control on the 11 items. The relation between scores on the full scale I.E. Scale and scores on the modified version that was used was assessed ($r=0.81$, $P<0.001$). To test interaction effects of locus of control, self-esteem, and persecutory delusions on suicidality in those with schizophrenia or schizoaffective disorder, LOC scores were dichotomized into "internal" and "external" LOC.

Self-Esteem

The Rosenberg Self-Esteem Scale was used to collect a measure of self-esteem (Harrow et al., 2009; Rosenberg, 1965). This scale is a ten item Likert scale with items answered on a four-point scale from "strongly agree" to "strongly disagree." Answers are given a score ranging from 3-0 on each item, with some questions reverse scored, and summed for the ten items. A higher score is indicative of higher self-esteem. An example of one of the questions is "On the whole, I am satisfied with my life" (Rosenberg, 1965). To test interaction effects of self-esteem, locus of control, and persecutory delusions on suicidality in those with schizophrenia or schizoaffective disorder, self-esteem scores were dichotomized into "low" and "high" self-esteem.

Chapter 4: Results

Hypothesis 1: Persecutory Delusions and Suicide in Schizophrenia

Parametric statistics (Chi-quare crosstabulations) were used to test the primary hypothesis that those with either a diagnosis of schizophrenia or schizoaffective disorder who endorse persecutory delusions will endorse less suicidal activity than those without persecutory delusions at each follow-up. For the purpose of these analyses, suicide score was dichotomized into absence or presence of any suicidal activity, meaning categories 2, 3, and 4 on the 4-point suicide scale were collapsed into one category representing the presence of any suicidal ideation or activity. Individuals with either diagnosis with a suicide score and a dichotomized score for persecutory delusions (yes/no) on at least three of the five follow-ups were included, as well as those individuals who completed suicide. No significant relationship was determined between persecutory delusions and suicidal activity at any of the follow-ups. However, across follow-ups, as the percentage of people with suicidal activity increased, the percentage of individuals with persecutory delusions also increased. As the percentage of people with suicidal activity decreased, the percentage of people with persecutory delusions also decreased.

Hypothesis 2: Self-esteem and Locus of Control as Mediating Variables

To test the second hypothesis (low self-esteem, an internal locus of control, and absence of persecutory delusions will be related to suicidality in those diagnosed with schizophrenia or schizoaffective disorder), a three-way univariate analysis of variance (ANOVA) was conducted. In order to test this second hypothesis, locus of control scores were dichotomized into “internal and external,” with higher scores indicating a greater external locus of control. Self-esteem was dichotomized into “high” and “low” categories, with higher scores indicating higher self-esteem. This second set of analyses only included individuals diagnosed with schizophrenia or

schizoaffective disorder with suicide scores and dichotomized scores of presence or absence of persecutory delusions on follow-ups 1, 2, and 4. No significant effects or interactions were found between any of the predictor variables (self-esteem, locus of control, persecutory delusions) and the dependent variable (suicidality) in any of the follow-ups.

Self-esteem and Suicidality

Cross-tabulations were also generated to examine patterns between the predictor variables and the dependent variable at follow-ups 1, 2, and 4. For the purposes of these analyses, suicide score was again dichotomized into presence or absence of suicidal activity. Only one significant positive correlation was found between self-esteem and suicidality at follow-up 4, $X^2(1, 35) = 4.265$, $p<.05$), such that individuals with high self-esteem also tended to endorse suicidal activity, and individuals with low self-esteem tended to endorse no suicidal activity (See Appendices A, B). Despite the lack of significant findings in follow-ups 1 and 2, a similar trend emerged. A larger or equal percentage of people who endorsed suicidal activity endorsed high self-esteem rather than low self-esteem, whereas a larger or equal percentage of people who did not endorse suicidal activity endorsed low self-esteem.

Locus of Control and Persecutory Delusions

A significant positive correlation was found between locus of control and persecutory delusions at follow-up 2, X^2 (1, 29)=4.909, $p<.05$, such that individuals who endorsed persecutory delusions also endorsed a more external locus of control (See Appendices C, D). All five individuals who endorsed persecutory delusions who also had a locus of control score tended endorsed more external locus of control. Despite the lack of significant findings in follow-ups 1 and 4, a similar trend emerged; a higher percentage of people who endorsed a more

external locus of control, rather than an internal locus of control, also endorsed persecutory delusions.

When comparing cross-tabulations between persecutory delusions and self-esteem at follow-ups 1, 2, and 4, the following trend emerged; a larger or equal percentage of individuals who endorsed persecutory delusions also endorsed high self-esteem, whereas a larger or equal percentage of people who did not endorse persecutory delusions endorsed low self-esteem.

Descriptive statistics and frequencies were also examined for a more precise understanding of the above patterns. Suicide score remained categorized according to a 4-point scale. At follow-up 1, of the four individuals with a self-esteem score who attempted suicide, all of them endorsed high self-esteem (See Appendix E). At follow-up 2, 18 of the 20 individuals who endorsed low self-esteem did not endorse suicidal activity. Similarly, at follow-up 4, all four of the individuals who endorsed suicidal activity who also had a high self-esteem score endorsed suicidal ideation or a suicide attempt. All of the individuals who endorsed low self-esteem did not endorse suicidal activity. These findings may account for the above mentioned trend and significant correlation that showed individuals with higher self-esteem scores tended to endorse more suicidal activity than those with low self-esteem scores. When means were examined for similar trends at each follow-up, follow-ups 1 and 2 showed those with persecutory delusions, high self-esteem, and an external locus of control had the second highest suicide mean (See Appendices F, G).

Chapter 5: Discussion

Deciphering predictor variables and risk factors of suicide is a necessary, yet complicating endeavor that has been met with many challenges. For example, thoughts and behaviors considered to be implicated in a suicide attempt, such as suicidal ideation, having a suicide plan, and engaging in self-harming behavior, do not always result in suicide. Certain risk factors that contribute to suicidal ideation may not significantly predict acting on those thoughts in a suicide attempt. Similarly, self-harming behavior is not always indicative of suicidal ideation (Nock & Kessler, 2006; Rudd et al., 2006). Individuals who engage in behaviors such as cutting or burning themselves may not perform these acts with the intention of ending their lives, though may still result in accidental suicides. Therefore the intention behind these acts is necessary to delineate in order to classify them as suicidal or non-suicidal behaviors (Harwood et al., 2001; Qin et al., 2003; Qin & Nordentoft, 2005). Given much of the research on suicide is retrospective in nature, confirming intent to die is often impossible. In the hopes of better understanding intent of self-harming behavior and identifying suicide attempts, such acts are often classified as lethal or non-lethal, depending on the severity of the behavior and the potential such behavior may have to result in death.

The present study was retrospective in nature, though the data collected from the original study was prospective, and therefore intent behind self-harming behavior was confirmed by the actual participants' self-report. Although prospective studies are better able to delineate intent behind behaviors, there is no way to guarantee a suicide will occur, and therefore such studies often have low numbers of suicides that limit the significance and generalizability of identified risks for suicide. Suicidal ideation, attempts, and completion are often combined to represent general suicidality, despite the different risks that may exist for each category. Therefore, in the

present study, suicidal ideation and suicide attempts could be correctly categorized as such, though suicide could only be confirmed retrospectively through death certificates and third party reports. Suicidal ideation, attempts, and completions were also combined to represent suicidality in order to perform several of the intended analyses.

This point is being made to clarify the difficulties researchers often experience when attempting to identify factors that either predict or are associated risk factors for suicide, suicidal attempts, and suicidal ideation. Nonetheless, common factors among individuals from different cultures who have completed suicide include vulnerabilities inherent with various psychiatric disorders, family and societal factors, personal factors such as cognition, self-esteem, and locus of control, and neurobiological functioning (Hendin, 1986; Kaplan et al., 2012; Qin et al., 2003; Stack, 2000; Zhang, McKeown, Hussey, & Thompson, 2005). Individuals with a mental disorder have been considered to be at a higher risk for suicide potential than "healthy" individuals; however, there is much debate as to whether having a mental disorder is a necessary prerequisite to suicide (Clark, Young, Scheftner, Fawcett, & Fogg, 1987; Mann, Waternaux, Haas, & Malone, 1999; Rudd et.al, 2006). Certain factors have been differentiated as being more or less related to individuals in the general populations vs. individuals in a psychiatric population (Busch, Fawcett & Jacobs, 2003; Harwood et al., 2011; Qin et al., 2003; Qin & Nordentoft, 2005), though of course not all individuals within a particular diagnosis experience suicidality (Hendin, 1986; Kaplan & Harrow, 1996; Mann et al., 1999).

Among the psychological disorders often identified as having the greatest prevalence of suicide, as well as being the most at risk for suicide, schizophrenia and depression are among the top two (Brugnall, Novick, Haro, Rossi, & Bartolomasi, 2012; Pompili et al., 2007; Radomsky et al., 1999). Empirical research has identified aspects such as self-esteem, hopelessness, poor

global functioning and a history of psychiatric hospitalization that relate similarly to suicidality among these disorders (Lippi et al., 2009; Pompili et.al, 2007), though diagnostic-specific risk factors have also been identified, such as fear of mental disintegration, being male and having higher premorbid functioning for those with schizophrenia. Otherwise weaker relationships between factors that are occasionally shared across disorders, such as delusions and paranoia, or those that may influence these disorders differently, such as locus of control or negative affect, have yielded conflicting conclusions regarding their association to suicide potential.

Delusions in particular have received significant focus in research on outcome in psychotic disorders, including schizophrenia, schizoaffective disorder, and mood disorders with psychotic features; however the presence of delusions and an increase in delusions seem to be differentially related to suicide potential depending on diagnosis and the presence of possible other mediating factors, such as low self-esteem, locus of control, depression, anxiety, and awareness in impairments in functioning. Much of the difficulties with specifying this relationship are a result of studies combining psychotic disorders into one category, thus negating the different influences symptoms of one disorder that are not shared by the others could have on suicide risk.

Also the grouping of symptoms into a single category, such as delusions, hallucinations, and a thought disorder into positive symptoms, rather than exploring the unique relationships that exist between these symptoms and suicide within a diagnosis, have led to generalizations that may not be representative of the direct influence of a particular symptom. For example, Unterrainer (2014) identified a direct relationship between higher PANSS positive scores and suicide attempts, though studies differentiating hallucinations from delusions specified an increase in hallucinations directly increased the likelihood individuals with schizophrenia would

attempt suicide; whereas an increase in delusions had the opposite effect (Grunebaum, 2001; Koeda et al., 2012).

Even when delusions are separated from hallucinations and a thought disorder, particular aspects of the delusions, such as mere presence, severity, and delusional type seem to have varying relationships to suicide risk both between and across diagnoses. For example, Powell et al. (2000) found the presence of delusions was one of the lowest predictive factors of suicide in patients with schizophrenia that committed suicide. However, other studies have found individuals diagnosed with a schizophrenia spectrum disorder that completed suicide experienced more severe delusions and suspiciousness than those who were at low risk for suicide, and identified the paranoid schizophrenia type as being associated with elevated risk for suicide (Fenton et al., 1997). Pompili et al. (2007) concluded that inpatients with persecutory delusions associated with the paranoid type of schizophrenia were more likely to commit suicide, though risk of committing suicide was more strongly associated with affective symptoms than with core psychotic symptoms. Therefore the increased suicide risk identified for individuals with schizophrenia and delusions may be influenced by factors related to affect, such as self-esteem or anxiety from feeling out of control of their psychological deterioration, given delusions were associated with increased suicide risk in individuals that may have been experiencing affective dysregulation.

Therefore, despite greater specificity in some areas of suicide research, the present study identified suicide risk in individuals with schizophrenia and persecutory delusions as a necessary area to explore, with self-esteem and locus of control as potentially mediating variables. Although individuals with schizophrenia and schizoaffective disorder were included for a larger

sample size, only those from either category who endorsed persecutory delusions were included, which was hoped to level some of the differences that exist between these two diagnostic groups.

The primary hypothesis, namely that individuals with schizophrenia or schizoaffective disorder and persecutory delusions would actually endorse lower suicidality than those with non-persecutory delusions or no delusions, was not substantiated. In fact, as a greater percentage of individuals endorsed suicidal activity, the percentage of those who endorsed persecutory delusions tended to increase. Although several studies have identified a similar relationship between persecutory delusions and schizophrenia (Lippi et al., 2009; Pompili et al., 2007), these studies also identified affective symptoms as contributing to this relationship. Given the present study included individuals with either schizophrenia or schizoaffective disorder, it is possible this trend was influenced by the affective dysregulation that may have been more prominent in those with schizoaffective disorder. Freeman et al.'s (2007) study, which identified those with persecutory delusions who exhibit safety behaviors such as acting on delusions, as having high stress and a history of suicide attempts, suggests the presence of persecutory delusions alone may not lead to suicide attempts, but when anxiety is high and individuals feel compelled to act on their delusions (possibly indicating a more internal locus of control), suicide attempts become more likely. Therefore the trend in the present study may indicate potential influences from stress and anxiety related to feeling threatened, and a stronger belief in their need, and ability, to protect themselves in response to the persecutory delusions.

In a similar vein, the Koeda et al.'s (2013) study offers a unique proposition that perhaps persecutory delusions contribute to the motivation required of individuals with schizophrenia to attempt suicide, as individuals in their study diagnosed with depression did not endorse similar motives for suicide attempts. Therefore, it is possible that if those with persecutory delusions

perceive themselves as being threatened and experience enough anxiety and stress surrounding their fears of being able to protect themselves, perhaps this stress drives them to either act out violently against others to confront the threat, or violently against themselves to escape the threat through a suicide attempt. When these suggestions are integrated with studies that claim suicide attempts of individuals with schizophrenia tend to be more serious than those of individuals with depression (Pompili et al., 2009), it is possible persecutory delusions, when experienced with stress or anxiety and met with an internal locus of control, may motivate individuals to reclaim a sense of control over their lives through reacting to threats of violence with aggression.

However, the role locus of control and anxiety seem to play in this process indicates other possible contributing factors such as self-esteem, as assessed in the present study, may offer further clarification as to how persecutory delusions may relate to suicide risk in those with schizophrenia. High self-esteem was significantly related to suicidal activity at the 10 year follow-up, as all four individuals who endorsed high self-esteem endorsed suicidal ideation or a suicide attempt, but those with low self-esteem did not. Although similar trends existed at the 2.5 year and 4 year follow-ups, these results are counterintuitive, and run contrary to the vast literature identifying low self-esteem as relating to increased suicide risk. However, Valiente et al. (2011) specified individuals with persecutory delusions may endorse high explicit self-esteem while experiencing low implicit self-esteem. Therefore, in the present study it is possible individuals endorsed high explicit self-esteem while actually experiencing low implicit self-esteem. Following this thought, the pattern that resulted between increased suicidality and increased persecutory delusions over all three follow-ups may indicate those with persecutory delusions endorsed higher explicit self-esteem, though simultaneously experienced low implicit self-esteem, and were therefore more likely to become suicidal. As the percentage of individuals

with persecutory delusions and suicidality increased, perhaps individuals felt a stronger need to portray an outward sense of confidence to protect themselves against an increased perception of external threat.

However, it is possible the increased sense of being threatened contributed to decreased implicit or internal self-esteem, particularly if individuals experienced higher distress as suggested above, felt less in control of their safety (perhaps indicated by a more external locus of control), and therefore contemplated or attempted suicide to escape these perceived threats and anxiety. In relation to Morris et al.'s (2011) conclusions that patients with "bad-me" persecutory delusions scored higher on shame, depression, and low self-esteem, it is possible participants in the present study with "bad-me" persecutory delusions experienced shame and depression from feeling out of control of their circumstances, though felt the need to maintain an outward façade of confidence as a desperate attempt to protect themselves from harm, and therefore endorsed higher self-esteem despite feeling more suicidal. What still needs clarification, however, is whether the persecutory delusions contributed to subsequent decreased internal self-esteem, endorsement of higher explicit self-esteem and increased suicidality, or if the persecutory delusions developed in response to individuals recognizing a decline in cognitive capacities and organization, experienced fear and stress surrounding losing further control of their mental abilities, and subsequently developed persecutory delusions to shift the shame they felt onto an external source.

This shift could then be considered an attempt to achieve relief from the possible depression, decreasing self-esteem, and/or shame that came with being aware of their impairments; placing the blame on something or someone else would absolve them of the responsibility for their declining functioning. However, such relinquishing of control can be

considered despairing in the face of existential anxiety; when confronted with their "thrownness" as schizophrenia develops despite their attempts to thwart its progression, individuals may search for any organizing explanation that offers them a sense of certainty and understanding in their increasingly chaotic experience. As Jaspers (as cited by Jacobs, 1980) suggested, developing a persecutory delusion may provide such an explanation and relief, though by identifying others as their source of distress, individuals perpetuate the avoidance of their reality, negate their innate capacity for choice, and absolve themselves of any responsibility for their future functioning. Such decisions may render treatment with these individuals very difficult, as their belief in the delusion is continuously reinforced by their abilities to avoid the shame, anxiety, and/or depression they would otherwise experience if they were more aware of the reality of their impaired functioning. However, not all individuals with schizophrenia experience persecutory delusions, which indicates this process may be mediated by factors that are not core aspects of this disorder.

Therefore the trend indicating increased suicidality coincides with increases in endorsements of persecutory delusions must be understood through multiple perspectives, rather than making conclusions that persecutory delusions are indicative of increased risk for suicide in those with schizophrenia. Given the last proposition which suggested the development of persecutory delusions may be individuals' unconscious attempts to combat low self-esteem or depression and ultimately avoid becoming suicidal, it is possible persecutory delusions have the potential to function as protective factors against individuals fully experiencing their fragmenting sense of self and the fear and existential angst that comes with being in this "thrown" state; however given the relationship between suicidality and persecutory delusions in the present study, perhaps they do not efficiently protect individuals from becoming suicidal. This

proposition has been made by several previous studies (Candido & Romney, 1990; Moritz, Werner, & von Calani, 2006; Valiente et al., 2011) as well as existential theories regarding the possible protective role delusions may play (Jacobs, 1980; Spiegelberg, 1972).

However, if persecutory delusions involve a shift from an internal source of blame and control to an external one, the subsequent sense of agency, or lack thereof, that individuals experience over their lives may have a strong influence on how they understand and react to their threatened future existence. As psychotic symptoms are, by definition, more prominent in schizophrenia than affective symptoms, it is possible this sense of agency, rather than depression or anxiety related to their deteriorating mental capacities, may play a larger role in determining an individual's risk for suicide. This differentiation in prominence of symptoms is particularly important in relation to suicide risk in this population, as individuals with schizophrenia may experience depression and anxiety in the presence of psychotic symptoms, such as persecutory delusions, though the relationship between them and suicidality may be less significant than in other disorders, such a mood disorders with psychotic features.

The importance of having reliable and valid diagnostic tools is therefore implicated here, as the varying prominence of particular symptoms, such as depression, anxiety, or delusions, seems to have significantly different impacts on suicide risk both within, and between diagnostic groups. For example, Harrow et al. (2009) found patients in the Chicago Follow-Up Study with schizophrenia who had higher external locus of control at the 4.5 year follow-up were likely to be more depressed and have higher psychotic activity, though those with paranoid schizophrenia did not endorse either a more external or internal locus of control than those with undifferentiated schizophrenia.

These results support the prior suggestion that those with schizophrenia who have an external locus of control also experience greater psychotic activity, such as an increase in persecutory delusions, and may experience depression. Although Harrow et al. (2009) did not specify which of these factors (depression or psychotic symptoms) may relate more strongly to an external locus of control, and did not address suicide risk, it is likely the presence of psychotic symptoms and an external locus of control have a stronger influence than depression in this population. Results from the present study support this suggestion, as a more external locus of control was significantly related to persecutory delusions, though not to suicidality. Several explanations for this relationship are possible. On one hand, the development of persecutory delusions may be in response to the recognition of one's sense of loss of control and internal fragmentation with the development of schizophrenia; the delusion may offer a sense of knowing, or understanding that reorients and reorganizes the individual within an alternative perception of reality, though comes at the price of losing their sense of agency and control over their lives. Such distortions of reality may then allow the individual to avoid experiencing the existential anxiety and low self-esteem of which those with other disorders with less prominent psychotic symptoms may be more aware.

Harrow et al. (2009) validated this possibility, as when patients with other diagnoses (schizoaffective disorder, bipolar disorder, or a major depressive disorder) were included in their analyses, those with an external locus of control were also significantly more likely to experience anxiety, hostility or low self-esteem. Although the present study did not assess the potential relationship between depression, anxiety, or hostility and suicide risk, it did address self-esteem. At both the 2.5 and 4 year follow-up, those with persecutory delusions, high self-esteem, and an external locus of control had the second highest suicide mean. As previously mentioned, those

with high self-esteem endorsed higher suicidality at the 10 year follow-up, and followed a similar trend at the 2.5 and 4 year follow-ups. Given self-esteem was explicitly reported, it is possible participants experienced low self-esteem but endorsed higher self-esteem due to feeling the need to protect themselves from perceived persecution.

Those with other diagnoses in which psychotic symptoms such as persecutory delusions may be less prominent, such as bipolar disorder or a major depressive disorder, may not feel as strong of a need to portray themselves as confident and competent, as fears of persecution if they appear weak or vulnerable may not pose as severe of threats to their physical and psychological safety. However, their awareness of their decline in functioning may be more acute, leading to increased anxiety surrounding their loss of control over their mental capabilities, decreased self-esteem and depression. Therefore, an external locus of control for these individuals may have different implications for suicide risk, as less prominent persecutory delusions may subject them to a greater awareness of their existential "thrownness," the angst and low self-esteem that comes with the perception of lost agency, and may either lead to despairing in depression or reacting with hostility.

However, for those with schizophrenia, an external locus of control accompanied by persecutory delusions may afford them partial avoidance of the anxiety, low self-esteem and depression others may experience more strongly, as these beliefs attribute the source of negativity to something or someone external, rather than themselves. Though given the present study found those who endorsed high self-esteem tended to endorse suicidal activity more often than those who endorsed low self-esteem, perhaps factors that were not addressed, such as poor social support, hopelessness, and fear of mental disintegration, which have all been

independently related to suicide risk in those with schizophrenia, had a stronger influence on suicidality.

Also, because the present study included individuals diagnosed with either schizophrenia or schizoaffective disorder, affective components such as depression and anxiety mentioned above that are more prominent in schizoaffective disorder may have contributed to increased suicidality despite their endorsement of high self-esteem. Therefore, individuals with schizoaffective disorder may experience persecutory delusions to a lesser extent than those with schizophrenia, may be more aware of their impairments in functioning, and experience more prominent depression and/or anxiety, though still feel the need to project a more confident outer appearance to feel more protected from external threats to their internal psychological fragility. For those with this diagnosis, their awareness of their impairments, depression, and anxiety may therefore contribute more strongly to becoming suicidal than for those with schizophrenia; though for either group, a high outwardly expressed self-esteem in the presence of persecutory delusion may relate to becoming suicidal.

Developing an external locus of control may contribute to this relationship, as a more internal locus of control may lead to hostility more often than suicide if individuals maintain a sense of agency and hope in their abilities to defend themselves from perceived persecution more actively. Nevertheless, for any of these disorders, suicide becomes a possibility, though findings from the present study suggest by attempting to understand the differences in the underlying psychological experience of these disorders, developing valid and reliable assessment and intervention strategies to both detect and address factors that may pose increased risk for suicide may be a greater possibility.

Limitations

There were several limitations to the present study. First, the sample consisted of individuals diagnosed with either schizophrenia or schizo-affective disorder. Given the inherent differences between the prominence of psychotic and affective symptoms between these disorders, results from the present study may have been influenced by such differences. Therefore, conclusions regarding how persecutory delusions may be related to suicide in those with schizophrenia, despite the support from past research and theoretical conceptualizations, may not be completely generalizable to this population. Similarly, the low numbers of individuals within these two diagnostic groups who had scores on each variable (persecutory delusions, self-esteem, suicidality, and locus of control) on all three follow-ups decreased the likelihood of finding statistically significant relationships between variables. However, given these low numbers, the fact that high self-esteem and suicidality, and external locus of control and persecutory delusions were significantly related, the present study highlights the importance of addressing these three factors in individuals with schizophrenia or schizoaffective disorder when assessing suicide potential.

Another limitation to this study is that other variables that have been strongly related to increased suicide risk for those with schizophrenia, such as fear of mental disintegration, poor social functioning, and male gender, were not included. Therefore, such factors could have influenced results related to suicide potential, such as the relationship between high self-esteem, suicidal ideation and suicide attempts, or the trend indicating as more individuals endorse suicidal activity, more endorse persecutory delusions. Also, other affective factors that have been related to increased suicide risk, such as depression, and those related to persecutory delusions, such as anxiety, were not addressed. Nonetheless, a strength of this study is that the meaning of

the trends and significant relationships was also proposed and supported by established existential perspectives on persecutory delusions, psychosis, schizophrenia, and human development in general, as well as by prior empirical studies. Therefore, conclusions regarding the potential relationship between persecutory delusions, an external locus of control, high explicit self-esteem, and suicidality in those with schizophrenia appear well-founded.

Conclusions and Recommendations

The present study highlights the potential role persecutory delusions may have in reorganizing the chaos inherent with the development of schizophrenia by redirecting individuals' focus from a place of internal struggle and anguish to an external source, thus offering partial relief from their awareness of impaired functioning and the decrease in self-esteem that may result from such awareness. However, given the severity of the persecution these individuals experience, it is possible they feel the need to project an outward sense of confidence to avoid also feeling vulnerable, thus to the objective clinician's eye, may not appear to experience depression, anxiety, or low self-esteem as predominant clinical concerns. Although it is still not well understood how persecutory delusions influence suicide risk for those diagnosed with schizophrenia, the present study suggests by adopting an external locus of control, individuals with persecutory delusions relinquish their sense of agency while developing a new sense of reality that may provide consistency and understanding in an otherwise confusing, unpredictable, ambiguous world. This shift in reality, externalized source of control, and subsequent perceived need to portray oneself as psychologically stable may persist despite resulting in the individual feeling constantly persecuted, as such beliefs may contribute to the individual feeling his or her life has worth, even if it is simply worth persecuting. However, despite such attempts to experience worth and consistency, the severity of the persecution as the

beliefs are continually justified may become overwhelming; suicide may be perceived as the only viable option to escape. This suggestion, however, requires more in depth exploration as to how the lived experience of persecutory delusions, the potential shift into an external locus of control, and the simultaneous experience of high and low self-esteem in those with schizophrenia may relate to their ultimate abilities to make meaning of, and find purpose in their future lives.

It is hoped that by providing a comprehensive potential explanation of the many factors that may relate to increased suicide risk in those diagnosed with schizophrenia, future research will address each of these factors in more depth and continue the quest to specify the protective potential persecutory delusions may have for this population. Given the experience of psychosis is not clinically addressed as often as its presence, perhaps understanding the meaning behind the objective presentation of symptoms would lend greater understanding of how such symptoms may differentially impact individuals' lives and would lead to more effective, sustainable preventative and treatment interventions for mediating suicide risk in individuals with schizophrenia.

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Appendix A: Suicidal Activity and Self-esteem and Follow-up 4

			selfcon4d self confidence F4		
			1.00 Low 0-3	2.00 High 4+	Total
f4suicrcaddi	1.00 No Suicide Act	Count	17	14	31
		% within f4suicrcaddi	54.8%	45.2%	100.0%
		% within selfcon4d self confidence F4	100.0%	77.8%	88.6%
	2.00 HAS sucide Act	Count	0	4	4
		% within f4suicrcaddi	.0%	100.0%	100.0%
		% within selfcon4d self confidence F4	.0%	22.2%	11.4%
Total		Count	17	18	35
		% within f4suicrcaddi	48.6%	51.4%	100.0%
		% within selfcon4d self confidence F4	100.0%	100.0%	100.0%

Appendix B: Chi-square of Suicidal Activity and Self-Esteem

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.265[a]	1	.039		
Continuity Correction[b]	2.352	1	.125		
Likelihood Ratio	5.807	1	.016		
Fisher's Exact Test				.104	.058
Linear-by-Linear Association	4.143	1	.042		
N of Valid Cases	35				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.94.

b. Computed only for a 2x2 table

Appendix C: Persecutory Delusions and Locus of Control at Follow-up 2

			locf2d		
			1.00 11-14	2.00 15+	Total
paradf2	1.00 No Del	Count	13	11	24
		% within paradf2	54.2%	45.8%	100.0%
		% within locf2d	100.0%	68.8%	82.8%
	2.00 Have Paranoid Del	Count	0	5	5
		% within paradf2	.0%	100.0%	100.0%
		% within locf2d	.0%	31.3%	17.2%
Total		Count	13	16	29
		% within paradf2	44.8%	55.2%	100.0%
		% within locf2d	100.0%	100.0%	100.0%

Appendix D: Chi-square of Persecutory Delusions and Locus of Control

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.909[a]	1	.027		
Continuity Correction[b]	2.963	1	.085		
Likelihood Ratio	6.787	1	.009		
Fisher's Exact Test				.048	.037
Linear-by-Linear Association	4.740	1	.029		
N of Valid Cases	29				

Appendix E: Suicidal Activity and Self-esteem at Follow-up 1

			selfcon1d self confidence f1		
			1.00 Low 0-3	2.00 High 4+	Total
f1suicrcad Suicide Activity, F1	1.00 No Activity (1-3)	Count	20	19	39
		% within f1suicrcad Suicide Activity, F1	51.3%	48.7%	100.0%
		% within selfcon1d self confidence f1	90.9%	73.1%	81.3%
	2.00 Ideation (4-6)	Count	2	3	5
		% within f1suicrcad Suicide Activity, F1	40.0%	60.0%	100.0%
		% within selfcon1d self confidence f1	9.1%	11.5%	10.4%
	3.00 Attempt (7)	Count	0	4	4
		% within f1suicrcad Suicide Activity, F1	.0%	100.0%	100.0%
		% within selfcon1d self confidence f1	.0%	15.4%	8.3%
Total		Count	22	26	48
		% within f1suicrcad Suicide Activity, F1	45.8%	54.2%	100.0%
		% within selfcon1d self confidence f1	100.0%	100.0%	100.0%

Appendix F: Suicidal Activity Means for Persecutory Delusions, LOC, and Self-esteem

selfparalocf1	Mean	Std. Deviation	N
1.00 No Pers, low self-esteem, low LOC	1.0000	.00000	3
2.00 No Pers, low self-esteem, High Loc	1.0000	.00000	3
3.00 No Pers, High self-esteem, Low Loc	1.0000	.	1
4.00 No Pers, High self-esteem, High Loc	1.0000	.00000	2
5.00 Has Pers, Low self-esteem, low Loc	1.0000	.00000	2
6.00 Had Pers, low self-esteem, High Loc	1.0000	.	1
7.00 Has Pers, High self-esteem, Low Loc	2.0000	.	1
8.00 Has Pers, High self-esteem, High Loc	1.6667	1.15470	3
Total	1.1875	.54391	16

Appendix G: F2 Suicidal Activity Means for Persecutory Delusions, LOC, and Self-esteem

selfparalocf2	Mean	Std. Deviation	N
1.00 No Pers, low self-esteem, low LOC	1.7500	.95743	4
2.00 No Pers, low self-esteem, High Loc	1.0000	.00000	3
3.00 No Pers, High self-esteem, Low Loc	1.0000	.00000	4
4.00 No Pers, High self-esteem, High Loc	1.0000	.00000	2
6.00 Had Pers, low self-esteem, High Loc	1.0000	.00000	2
8.00 Has Pers, High self-esteem, High Loc	1.5000	.70711	2
Total	1.2353	.56230	17