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# Sociocultural Factors that Predict Attrition from a Family Treatment for Schizophrenia

Kayla K. Gurak

*University of Miami*, [kayla.gurak@gmail.com](mailto:kayla.gurak@gmail.com)

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UNIVERSITY OF MIAMI

SOCIOCULTURAL FACTORS THAT PREDICT ATTRITION FROM A FAMILY  
TREATMENT FOR SCHIZOPHRENIA

By

Kayla Krystal Gurak

A DISSERTATION

Submitted to the Faculty  
of the University of Miami  
in partial fulfillment of the requirements for  
the degree of Doctor of Philosophy

Coral Gables, Florida

August 2017

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FROM A FAMILY TREATMENT FOR SCHIZOPHRENIA

Kayla Krystal Gurak

Approved:

\_\_\_\_\_  
Amy Weisman de Mamani, Ph.D.  
Associate Professor of Psychology

\_\_\_\_\_  
Gail H. Ironson, M.D., Ph.D.  
Professor of Psychology and  
Psychiatry

\_\_\_\_\_  
Saneya H. Tawfik, Ph.D.  
Clinical Assistant Professor of Psychology

\_\_\_\_\_  
Guillermo Prado, Ph.D.  
Dean of the Graduate School

\_\_\_\_\_  
Franklin H. Foote, Ph.D.  
Lecturer in the Department of Psychology

\_\_\_\_\_  
Edward Rappaport, Ph.D., ABPP  
Associate Professor in the College of Arts and Sciences

GURAK, KAYLA KRYSTAL  
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Attrition (or premature treatment dropout), particularly from family treatments, continues to be a poorly understood phenomenon. High attrition rates mean that patients with schizophrenia and their caregivers are not obtaining the benefits that family treatments offer (e.g., reductions in symptom severity and caregiver burden) and are also experiencing additional negative outcomes (e.g., poorer patient social functioning, poorer caregiver mental health). Although research consistently demonstrates that certain demographic factors, such as being an ethnic minority, predict greater attrition from treatment, we know little about sociocultural factors that may explain why these relationships exist. In a sample of 115 families that were enrolled in a larger project comparing family treatments for schizophrenia (a culturally informed treatment for schizophrenia (CIT-S) versus a psycho-education comparison condition (PSY-ED), we hypothesized that families in which patients and caregivers had higher levels of interdependence, lower levels of independence, higher levels of family cohesion, and engaged in more adaptive religious coping and less maladaptive religious coping, would be more likely to remain in treatment/attend a greater number of family therapy sessions. Data was analyzed in the full sample (CIT-S and PSY-ED families combined) as well as

separated by treatment condition. Results from several statistical analytic approaches are presented (binary logistic regression, multiple linear regression, survival analysis, content analysis). In line with study hypotheses, results across treatment conditions and analyses consistently demonstrated that greater maladaptive religious coping, particularly in caregivers, was associated with an increased likelihood of attrition/fewer family therapy sessions attended. However, contrary to expectations, greater adaptive religious coping was also found to be associated with an increased likelihood of family attrition/fewer family therapy sessions attended. Additionally, in the subsample of PSY-ED families, results indicated that families in which patients had lower levels of independence were less likely to drop out of treatment prematurely when compared to families with patients who had higher independence scores. No other significant predictor variables were identified. Results suggest more religious individuals may already be getting the support and guidance they need from their spiritual/religious institutions which may aid them in coping with their own/their relative's mental illness. Results may also suggest a "religiosity gap" in which religious individuals may perceive a disconnect between their beliefs and the beliefs of their providers. Therefore, modifications to how family treatments are marketed and presented to families may be warranted so that individuals feel treatments are congruent with their religious beliefs. Further, as survival analyses indicated that families tend to drop out of treatment early on, we may also want to ensure that the most critical information is delivered in the first few sessions. Additional implications for the current study are discussed.

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## **Chapter 1**

### **Introduction**

Schizophrenia is a severe and chronic mental illness that affects approximately 1% of the population worldwide (Mueser & Jeste, 2008). Due to its chronic and debilitating nature, schizophrenia impacts the entire family as the majority of patients rely on family members to assist with many aspects of their care. Fortunately, a variety of effective treatments options are available, including family treatments. Previous studies have demonstrated that family treatments are effective in reducing patient symptom severity, hospitalizations, and relapse rates (Berglund, Vahlne, & Edman, 2003; Cassidy, Hill, & O'Callaghan, 2001; McWilliams et al., 2012; Montero, Asencio, Ruiz, & Hernández, 1999; Pitschel-Walz, Leucht, Bäuml, Kissling, & Engel, 2001; Weisman de Mamani, Weintraub, Gurak, & Maura, 2014). However, as few as 0.7% to 8.0% of families coping with severe mental illness receive any family therapy at all (Dixon et al., 1999). Additionally, patients with schizophrenia are considered one of the highest-risk populations for premature discontinuation of treatment and have been found to be 23 to 90% more likely to drop out of treatment when compared with other diagnostic categories (Gaebel et al., 2004; Hamilton, Moore, Crane, & Payne, 2011; Kreyenbuhl, Nossel, & Dixon, 2009). Inconsistent attendance and early discontinuation of treatment (also known as attrition) have been shown to be associated with poorer patient outcomes such as, greater symptom severity, repeated hospitalizations, higher rates of suicide, homelessness, and poorer social and vocational functioning (Fischer et al., 2008; Kreyenbuhl et al., 2009). It is also associated with poorer outcomes for caregivers including increased stress, financial difficulties, and greater rates of depression, anxiety, and somatic complaints (Chan, 2011; Moller, Gudde, Folden, & Linaker, 2009).



Identifying characteristics or factors that are associated with individuals who are more likely to drop out of treatment prematurely is crucial to the development and dissemination of effective treatments as high attrition rates mean that patients and their family members are not receiving the benefits that these treatments may offer.

Additionally, ethnic disparities are observed such that minorities demonstrate lower utilization rates of psychotherapy (Fischer et al., 2008; Hamilton et al., 2011), higher attrition rates when they do present for treatment, and poorer outcomes associated with their premature termination (Burlew et al., 2011; Coatsworth, Duncan, Pantin, & Szapocznik, 2006; Kazdin & Mazurick, 1994; Rogler, 1997; Snell-Johns, Mendez, & Smith, 2004; Wallace & Bartlett, 2012). This disparity has been consistently observed within the literature, yet the underlying reasons remain unknown. To date, the majority of studies have focused on fixed, demographic variables in attrition studies. Surprisingly however, little research has examined sociocultural factors that may better predict which families are at high-risk of premature treatment dropout. Thus, in the context of a newly developed, multi-pronged family treatment for schizophrenia and a psychoeducation-only family treatment (Weisman de Mamani et al., 2014), the current study examined several patient and family member sociocultural variables in an attempt to predict premature dropout from both treatment conditions. As both family treatments compared in the current study have previously demonstrated treatment efficacy (Goldstein & Miklowitz, 1995; Weisman de Mamani et al., 2014), the current study instead focused on identifying potential sociocultural variables that may be driving attrition rates. Results from the current study may allow us to better predict those at high risk for attrition and also help to identify sociocultural variables that could be targeted and modified early in treatment to

decrease the risk of premature dropout in order to ensure that more families are receiving and staying in family treatments for schizophrenia long enough to obtain benefit.

This dissertation begins with an overview on the current body of attrition literature and factors that have been previously found to be associated with higher rates of attrition. Next, the literature on several sociocultural variables (namely, interdependence, independence, family cohesion, and adaptive and maladaptive religious coping) is reviewed and discussed in relation to attrition. Based on the body of literature reviewed, study hypotheses are then presented. Finally, the analytic plan for testing the study hypotheses is presented and followed by results and a discussion of the implications of the current study's findings.

#### *Attrition from Psychotherapy*

Although there is no universally accepted definition, attrition is generally defined as a client or family leaving before a prescribed treatment is completed or if a therapist determines that a client is not yet ready to terminate. Attrition from psychotherapy across different diagnoses, settings, and treatment modalities is noted to range between 20-60% (Hamilton et al., 2011; Salmoiraghi & Sambhi, 2010; Wierzbicki & Pekarik, 1993). Based on the results from their meta-analysis, Wierzbicki and Pekarik (1993) reported an average dropout rate of 46.86%. Additionally, Hansen, Lambert, and Forman (2002) found that even though an average of 12.7 therapy sessions is needed in order for patients to improve, most patients attend less than 5 sessions. In other words, few patients are receiving the minimum number of therapy sessions required to be effective. With an average attrition rate of nearly 50% and clients attending few (if any) treatment sessions, attrition is clearly a common and serious problem in psychotherapeutic interventions.

Prior research has also suggested that it is important to determine the specific time points in treatment (i.e., which sessions) clients are at the greatest risk for attrition (Corning & Malofeeva, 2004). Identifying *when* clients are most likely to drop out could help to identify potential treatment or procedural modifications that may increase the chances of patients remaining in treatment. For example, the majority of studies indicate that the largest percentage of dropouts occur earlier as opposed to later in treatment programs, typically within the first few sessions (e.g., Harris, 1998; Swift & Greenberg, 2012). Thus, it is possible that early on in treatment patients have yet to “buy in” to the idea of treatment and have yet to experience benefit. On the other hand, if studies demonstrate that a large number of clients are dropping out late in treatment, one would consider issues such as treatment fatigue. Identifying these time points (early versus late sessions) or, in a specified treatment, the types of sessions that clients tend to leave, may provide valuable information that could lead to protocol changes that may increase retention rates (e.g., finding ways to increase client engagement and/or enthusiasm for treatment).

Several client-related demographic factors have consistently been found to be associated with higher rates of attrition including younger age (O’Brien, Fahmy, & Singh, 2009; Salmoiraghi & Sambhi, 2010; Swift & Greenberg, 2012), male gender (O’Brien et al., 2009), having a lower level of education or income (Salmoiraghi & Sambhi, 2010; Swift & Greenberg, 2012; Wierzbicki & Pekarik, 1993), and identifying as an ethnic minority (O’Brien et al., 2009; Wierzbicki & Pekarik, 1993). The majority of studies indicate that the aforementioned demographic variables are also associated with higher attrition rates in schizophrenia patients (Fischer et al., 2008; Harding et al., 2008;

Kurtz, Rose, & Wexler, 2011; Twamley, Burton, & Vella, 2011; Villeneuve, Potvin, Lesage, & Nicole, 2010). Additional factors that have been found to be associated with higher attrition rates in schizophrenia patients include but are not limited to, lower medication compliance (Prince, 2005), greater psychiatric symptom severity (Harding et al., 2008; Lincoln et al., 2014; Novak-Grubic & Tavcar, 2002; Primm et al., 2000; Thompson et al., 2011), and substance abuse and use problems (Prince, 2005; Weiss, Smith, Hull, Piper, & Huppert, 2002).

Prior research has demonstrated that when ethnic minorities seek professional help for mental health issues, more than 70% will not return after their first visit (Aguilar-Gaxiola et al., 2002). They have also been found to be six times as likely to underutilize mental health services when compared with ethnic majority patients (Wells, Hough, Golding, Burnam, & Karno, 1987). While previous studies broadly refer to all ethnic minority patients, the majority of studies have examined Hispanic/Latino and African-American patients, which is where the current study focused its efforts. However, despite several studies demonstrating that both Hispanics/Latinos and African-Americans consistently underutilize mental health services and prematurely terminate treatment (Mengesha & Ward, 2012; Neighbors et al., 2007; Prado, Pantin, Schwartz, Lupei, & Szapocznik, 2006; Vega, Kolody, Aguilar-Gaxiola, & Catalano, 1999), it is still unclear as to what is driving these findings as little research has examined factors beyond demographic variables or ethnic identifiers. However, ethnicity should not be viewed as a proxy for underlying cultural beliefs, behaviors, and attitudes (Sood, Mendez, & Kendall, 2012). Instead, it is important to pinpoint specific cultural variables that may be driving attrition.

### *Attrition from Family Treatments*

Attrition rates are noted to be high in family treatments ranging from 40 to 60% (Wierzbicki & Pekarik, 1993). In a review of 434,317 patient medical records, Hamilton et al. (2011) found that individuals who attended family therapy were 33.2% more likely to prematurely terminate treatment when compared to those who had attended individual therapy. To the best of our knowledge, no studies to date have specifically examined family factors which may predict attrition from family treatments for schizophrenia. However, a handful of studies have examined parent characteristics related to dropout from family treatments for child and adolescent disorders (not related to schizophrenia). As the majority of schizophrenia caregivers are parents (Chan, 2011), we hoped to extrapolate from the findings from these family treatments for children. In line with the literature on attrition from adult psychotherapy, the majority of studies have found that early parent attrition from child psychotherapy treatments is associated with ethnic minority status (Kazdin & Mazurick, 1994; Robbins et al., 2011), lower SES (Coatsworth et al., 2006; Kazdin & Mazurick, 1994), lower parental education (Coatsworth et al., 2006; McCabe, 2002), and being a young mother (Kazdin & Mazurick, 1994).

Previous studies also suggest that maintaining rapport and a therapeutic alliance with all family members presenting for family therapy may be difficult. For example, if one family member, especially one in a position of power, is resistant or hesitant to attend treatment, this may mean discontinuation for the entire family unit (Hamilton et al., 2011; Shapiro & Budman, 1973). Yet, little research has examined the role that family member attitudes and beliefs play in attrition from schizophrenia family treatments. It seems especially important to examine caregiver factors since caregivers are likely managing

most aspects of the patient's care and could largely influence whether or not a family remains in treatment.

### *Sociocultural Variables and Treatment-Related Beliefs and Behaviors*

Several sociocultural variables (interdependence, independence, family cohesion, and adaptive and maladaptive religious coping), which are each discussed below, have not only demonstrated relationships with schizophrenia symptomatology and course of illness, but may also be related to family treatment beliefs and behaviors. Previous research has demonstrated that these values may be particularly important for ethnic minorities but are likely beneficial to all families (Weisman, 1997; Weisman & López, 1996). Furthermore, as these variables are typically integral parts of both Hispanic/Latino and African-American families, these variables may be particularly strong predictors of treatment-related decisions and may help to explain the higher attrition rates observed in ethnic minority families.

### *Interdependence and Independence*

Previous cross-cultural research has demonstrated that individuals vary in the extent to which they define their sense of self by their social relationships. Whether individuals primarily hold an interdependent or independent self-construal also greatly depends on their cultural background (Cross, Bacon, & Morris, 2000; Singelis, 1994). Examining opposite ends of the self-construal spectrum, individuals who largely define themselves by their personal relationships are said to hold a more interdependent view of the self, whereas individuals who primarily focus on their separateness and uniqueness are said to hold a more independent view of the self. Individuals from developed nations and/or Western cultures (e.g., the U.S., Australia, Canada) tend to hold a more

independent view of the self which emphasizes one's individuality and sees the self as a unitary and stable entity that functions independently from social context (Singelis, 1994). Individuals from developing countries and more traditional cultures (e.g., Nigeria, India, Colombia) typically hold more interdependent views in which they are closely linked to others in their group (both family and community) and value humility, anonymity, and collectivism (Triandis, 1995). Although prior research has identified patterns in how individuals from shared cultural backgrounds typically view themselves, it is important to note that an individual's independent and interdependent views are not necessarily orthogonal constructs. In other words, a person may be high or low on either or both constructs (Cross, 1995).

It is important to take into consideration an individual's degree of interdependence and/or independence as the "self" is a strong motivator and influence on human social behavior (Cross et al., 2000). Individuals with a strong sense of independence generally aim to maintain a sense of autonomy and stay true to personal values, goals, and preferences (Cross & Madson, 1997). Although social relationships are important to independent individuals, they are often viewed as secondary to the individual's needs (Cross & Madson, 1997). In contrast, individuals with a strong sense of interdependence generally view the self and others as intertwined and thus, prioritize the group's wants, needs, and preferences over their own individual desires (Singelis, 1994). Further, interdependent individuals often look to their relationships with others and other social contextual factors to determine how to regulate their behaviors (Singelis, 1994). In fact, the boundaries between the self and others are more fluid and these individuals easily take on the perspective of others in their group and modify their

behaviors in order to do what is best for the group (Cross & Madson, 1997). In other words, interdependent individuals' thoughts and behaviors appear to be strongly influenced by the needs and desires of other group members with the ultimate goal of maintaining harmonious relationships (Cross et al., 2000; Singelis, 1994). Previous studies have demonstrated that individuals who rank higher on independence generally strive for self-promotion or self-enhancement (Cross et al., 2000) whereas individuals who rank high on interdependence strive to maintain group cohesion and are less conflictual (Kim, Aune, Hunter, Kim, & Kim, 2001; Oetzel, 1998). Relatedly, family members with strong interdependent views may take a more empathic and understanding stance towards a family member with schizophrenia and may also view symptomatology in a more benign way (Weisman, 2005). These views may in turn help to maintain family solidarity (Weisman, 2005). As interdependent individuals strive to preserve the interconnectedness of the group and engage in behaviors that are beneficial to all, these views may lead interdependent family members to be more likely to "stick it out" or remain in treatment in order to demonstrate family unity and offer support to the patient and other family members. For example, these types of highly interdependent individuals may be more likely to endorse statements such as, "I will sacrifice my self-interest for the benefit of the group I am in." and "If my brother or sister fails, I feel responsible." On the other hand, individuals with a more independent view of the self may decide that their own personal goals are more important or that treatment is not the best use of their time since the patient is the one that is ill.



### *Family Cohesion*

Both Hispanic/Latino and African-American families place strong value on family reliance and prefer to handle family problems within the family (Coatsworth et al., 2006; McCabe, 2002). Family cohesion is a construct that is related to both interdependence as well as the great importance placed on family relationships. Family cohesion reflects perceptions of family unity and the degree to which family members are committed to and provide help and support to each other (Moos & Moos, 1976). Interestingly, previous studies have demonstrated that family cohesion may influence treatment-related decisions. Although not in schizophrenia, Armbruster and Fallon (1994) found that for families presenting for treatment at a children's mental health clinic, lower SES and lower family cohesion were associated with higher premature family dropout rates. Similarly, in a sample of children who were referred for school-linked mental health services due to emotional and behavioral problems, Keeley and Wiens (2008) found that lower levels of family cohesion were associated with a greater likelihood of refusing treatment. Study results seem to suggest that families who are less cohesive may feel less commitment to each other and therefore, may be less likely to aid and support one another in obtaining and remaining in treatment (Armbruster & Fallon, 1994; Keeley & Wiens, 2008). Indeed it seems that families with little group spirit and those who do not feel that their family members "back each other up," would be less committed to providing help and support to one another and therefore, less inclined to remain in treatment together.

Keeley and Wiens (2008) as well as others (e.g., Coatsworth et al., 2006; Perrino, Coatsworth, Briones, Pantin, & Szapocznik, 2001) have based their studies on and found

support for theoretical frameworks which draw from a family systems perspective. These theories posit that family systemic variables have the strongest influence on individuals' behaviors and are likely to be much stronger predictors of treatment participation when compared to family demographic information (Bronfenbrenner, 1979; Minuchin, 1974). Thus, these theories seem to suggest that family sociocultural constructs such as interdependence, independence, and family cohesion may help to explain treatment-related behaviors such as premature dropout better than family demographic information.

#### *Adaptive and Maladaptive Religious Coping*

Previous research suggests that ethnic minorities tend to rely heavily on their religion when coping with stressful life events such as mental illness in the family. In fact, several studies have demonstrated that religious coping is more common among Blacks and Hispanics/Latinos when compared to other ethnic groups (Weisman de Mamani, Tuchman, & Duarte, 2010). For example, Chatters, Taylor, Jackson, and Lincoln (2008) found that when dealing with stressful situations, African-Americans and Caribbean Blacks tend to rely more heavily on religious coping when compared to non-Hispanic Whites. For example, results from a national survey revealed that when asked about coping with serious health problems (i.e., depression, cancer, heart disease) in "the past year," 43% of African-American female participants endorsed having used religious coping (Dessio et al., 2004). Additionally, Esterberg and Compton (2006) found that religious and/or spiritual beliefs about schizophrenia played an important role in their sample of African-American patients and suggest that these beliefs may influence how family members cope with the illness as well as how they decide to seek help with managing the illness. Weisman, Gomes, and López (2003) similarly found that nearly

40% of less acculturated Hispanics with a relative with schizophrenia used their religion as a way to cope with the stressors of the illness.

Although using religion as a coping resource is quite common, particularly among ethnic minorities, previous studies have demonstrated mixed outcomes associated with religiosity. Authors such as Clark (1958), McCrae (1984), and Pargament et al. (1990) have noted the importance of differentiating between different religious practices (e.g., prayer, confession) as well as different forms of coping (i.e., active, passive, interactive). Further, differentiating these forms of religious activities into adaptive and maladaptive uses may help to explain the mixed findings within the literature.

On the one hand, previous findings demonstrate that more maladaptive uses of religious coping negatively impact physical and mental health behaviors and outcomes. For example, African-Americans with strong religious beliefs who put their fate entirely in “the hands of God” are less likely to abstain from smoking (Hooper, Baker, Rodriguez de Ybarra, McNutt, & Ahluwalia, 2012) and are also less likely to engage in preventive health behaviors such as getting breast cancer screenings (e.g., Kinney, Emery, Dudley, & Croyle, 2002). Relatedly, Edwards, Moric, Husfeldt, Buvanendran, and Ivankovich (2005) found in a sample of patients coping with chronic pain, both African-American and Hispanic/Latino patients relied more heavily on a “passive” coping strategy of prayer when compared with White patients. Interestingly, the authors found that passive forms of coping were related to greater pain, distress, and disability (Edwards et al., 2005). Thus, it seems that more passive or inactive means of coping with illness (e.g., relying solely on prayer or faith that God will take care of all problems) may lead individuals to take a “back seat” approach to their healthcare and simply wait to see what their fate will

be (e.g., “I let God solve my problems for me.”). Furthermore, endorsing maladaptive religious beliefs such as punishing God appraisals (e.g., viewing an event as a punishment from God) has been found to be associated with greater psychological distress and poorer psychological wellbeing (Phillips & Stein, 2007). For example, Lee, Roberts, and Gibbons (2013) found that in a sample of college students coping with the death of a loved one, negative religious coping (e.g., endorsing beliefs such as, “Wondered whether God had abandoned me.”) was associated with increased negative emotions and prolonged recovery from grief. Holding these types of beliefs also seems to coincide with a more passive religious coping style in which God has already predetermined one’s fate and since the individual feels that they have little control or say in the situation, they adopt an inactive stance (e.g., “What’s the point?” or “I will focus on the world-to-come rather than the problems of this world.”). Furthermore, holding beliefs of punishment from or abandonment by God can also lead to feelings of discontent and resentment with one’s religion (e.g., “I felt angry with or distant from God.” or “I questioned my religious beliefs and faith.”). Based on the literature reviewed above, it seems that maladaptive religious coping and holding negative religious appraisals may make a difficult situation worse. Relying on this type of belief system is likely to negatively affect individuals in treatment (and their retention rates) by making them feel as if they have little control or say in the situation at hand. Therefore, these individuals may be more likely to adopt an inactive stance towards mental health care (e.g., “What’s the point in trying if my fate has already been decided for me?”).

On the other hand, more adaptive forms of religious coping have been found to be associated with positive physical and mental health outcomes (Weisman, 2005). For

example, use of religious coping has been found to be beneficial in dealing with mental health problems (e.g., Pieper, 2004) and greater religiosity has been found to be associated with greater symptom remission and less substance use in patients with schizophrenia and other psychotic disorders (Borras et al., 2007). Previous studies suggest that adaptive religious beliefs (e.g., viewing a negative event as a life lesson from God which ultimately serves to strengthen the person) may provide a foundation for meaning making in coping with mental illness and may also create an opportunity for spiritual growth (Tabak & Weisman de Mamani, 2014). Furthermore, positive religious appraisals can instill a sense of hope and optimism and help individuals make sense of life events (Weisman, 2005). For example, religious reappraisals that aid individuals in benefit-finding related to life experiences (e.g., “Found the lesson from God in the event.”) or feeling as if they have the collaboration of God in attempting to solve life problems (e.g., “Took control over what I could and gave the rest to God.”), have been found to be associated with a greater sense of personal control and better quality of life (e.g., Pargament et al., 1988). These individuals seem to use their religion as a resource to help them through a difficult time. Instead of relying solely on their religious belief systems to solve their problems for them, they seem empowered by their beliefs and seek out ways in which they can improve their situation. Thus, instead of a negative life event causing the individual to submit to the difficult situation and take on a “woe is me” attitude, these individuals seem more likely to adopt a “can do” attitude as they go forth with the assistance and support of their religious belief system (e.g., “In dealing with the problem, I was guided by God.”). Taken together, it seems that adaptive religious beliefs and appraisals may positively influence family member retention in treatment since these

individuals may be more likely to actively seek out ways in which they can improve their family's situation and may be more committed to remaining a unified front against mental illness for the benefit of the mentally ill individual which may in turn, foster feelings of family cohesion and interdependence.

### **The Current Study**

To the best of our knowledge, sociocultural variables have yet to be examined as potential predictors of attrition within the schizophrenia treatment intervention literature. Furthermore, little research has examined these sociocultural variables in family treatments for schizophrenia by examining both patient and caregiver factors. This study aimed to expound upon previous findings by examining multiple sociocultural constructs (specifically, interdependence, independence, family cohesion, and adaptive and maladaptive uses of religious coping) and their relationship to attrition in an ethnically diverse sample of families coping with schizophrenia. Study hypotheses were examined in the context of family treatments for schizophrenia (please see Methods section where the study is described in detail) which allowed for examination of potential differences between the two treatment conditions.

Based on previous findings reviewed in the literature above, the current study proposed to test the following hypotheses. For both treatment conditions and for both patients and caregivers:

- 1) A greater interdependent self-construal would be associated with lower rates of attrition/a greater number of family therapy sessions attended.
- 2) A greater independent self-construal would be associated with greater rates of attrition/a lower number of family therapy sessions attended.

- 3) Greater family cohesion would be associated with lower rates of attrition/a greater number of family therapy sessions attended.
- 4) Greater adaptive religious coping (specifically, greater overall religiosity, greater use of spiritually-based coping, greater endorsement of good deeds, and greater use of interpersonal religious support) would be associated with lower rates of attrition/a greater number of family therapy sessions attended.
- 5) Greater maladaptive forms of religious coping (specifically, demonstrating discontent with God and/or religious faith, pleading with God, and greater use of religious avoidance) would be associated with greater rates of attrition/a lower number of family therapy sessions attended.
- 6) On an exploratory basis, we attempted to pinpoint the session(s) in which the majority of families drop out of the CIT-S treatment condition.

**Chapter 2**  
**Method**  
*Sample*

The current study is part of a larger treatment study examining the efficacy of a newly developed family treatment for schizophrenia (CIT-S) when compared to a psychoeducational (PYS-ED) treatment condition (Weisman de Mamani et al., 2014). Both treatment conditions are described below. The current study's sample was comprised of both patients with schizophrenia and their family members who were recruited for a family intervention study at the University of Miami Department of Psychology. Participants were recruited from advertisements displayed throughout Miami including in local newspapers, hospitals, and the above-ground rail system, the Metrorail. Patients and family members were required to first complete an eligibility telephone screen and indicate the number of family members interested in participating in the study. Patients or family members who responded to the advertisement were required to have a minimum of one additional family member who would be able to participate in family therapy with them in order to be eligible for the study. Exclusion criteria for patients included being actively psychotic at the time of the initial telephone screen or first assessment interview, not meeting DSM-IV criteria for schizophrenia or schizoaffective disorder, being suicidal at the time of the assessment, having a recent suicide attempt (within the last year), having been Baker-Acted or involuntarily hospitalized within the past 3 months, or having a history of or having been recently incarcerated for violent crimes.

Several family members could participate in the study together. However, to ensure independence of data, the current study only used data from patients and primary



caregivers. Primary caregiver status was defined as the relative who reported spending the most time with the patient. Professional or paid caregivers were not eligible to participate in the current study. Thus, 115 families comprised the current study sample. The sample of patients was 59.4% male and 40.6% female with a mean age of 38.17 ( $SD = 13.02$ ). Patients self-identified their ethnicity as Caucasian (20.8%), African-American (26.0%), Hispanic/Latino (47.9%), or Other (3.1%). Two patients had missing data for ethnicity (2.1%). Primary caregivers in this sample were 38.3% male and 61.7% female with a mean age of 50.05 ( $SD = 14.56$ ). Caregivers self-identified their ethnicity as Caucasian (20.9%), African-American (29.6%), Hispanic/Latino (47.0%), or Other (2.6%).

Upon completion of the eligibility phone-screen, patients and family members were scheduled for a baseline assessment interview which was conducted at the University of Miami Psychological Services Center. The assessment lasted approximately 3 hours and was conducted in participants' preferred language (either English or Spanish). After the baseline assessment and confirmed eligibility, the family was then randomly assigned to either the CIT-S or PSY-ED family therapy treatment conditions.

#### *Treatment Conditions*

##### *A Culturally Informed Treatment for Schizophrenia (CIT-S)*

CIT-S is a fully manualized family treatment approach with 5 modules (discussed below) which are each covered for 3 weeks for a total of 15 weekly sessions lasting 60-75 minutes per session (see Weisman, 2005; Weisman, Duarte, Koneru, & Wasserman, 2006). CIT-S can be provided in either English or Spanish and a series of detailed handouts (also provided in English or Spanish) accompanies each session. Families are

given between-session homework assignments so they can practice newly acquired therapy skills outside of session. CIT-S also incorporates modules that have previously demonstrated efficacy in families coping with schizophrenia. CIT-S is considered a culturally informed treatment as it incorporates therapeutic elements informed by cross-cultural research and includes two novel modules on religion/spirituality and family collectivism (Weisman de Mamani et al., 2014). CIT-S also takes into consideration the beliefs, behaviors, and practices of the family presenting to treatment and aims to incorporate these constructs into treatment. In other words, CIT-S is tailored to account for a family's already established cultural values and does not aim to sway the family in one particular direction (e.g., toward a specific organized religion). CIT-S attempts to access and foster the adaptive beliefs, behaviors, and cultural practices of families' backgrounds while also attempting to modify any maladaptive beliefs and behaviors that may be present. An additional goal of the CIT-S treatment is to foster spiritual beliefs and perceptions of family collectivism. Previous research suggests that promoting these values may be particularly important for ethnic minorities but are likely beneficial to all families (Weisman, 1997; Weisman & López, 1996). CIT-S is compared to a 3-session psychoeducational treatment condition (described below).

*Family Collectivism (module one):* The primary objective of this module is to enhance the families' perspective that they are a part of a unified team working towards the same goal. In the first session, each family member is asked to verbalize their goals and expectations for treatment. The most commonly reported goals are improving family relationships and effectively managing the patient's care. Thus, this dialogue typically creates an opportunity to point out commonalities between family member goals and

demonstrate that family members often have similar objectives (e.g., to get along better) but simply have different ideas about how to get there. Handouts, activities, and homework assignments are used to generate discussions about how family members view their personal identity in the family unit, their values and contributions, what they like about their family, and what part(s) of the family dynamic they would like to see change. Through these discussions, the therapist works to unify the family, emphasize commonalities, and deemphasize the differences (Weisman de Mamani et al., 2014). Emphasis is also placed on how the family can work as a unit to improve family functioning, reduce family problems, and best care for the patient.

*Psychoeducation (module two):* This module is primarily drawn from a previously developed intervention (Falloon, Boyd, & McGill, 1984) that was adapted by others (Miklowitz, 2008; Miklowitz & Goldstein, 1997; Mueser & Glynn, 1999). The primary objective of this segment is to educate patients and their family members on the common symptoms of schizophrenia and the prodromal symptoms that may be indicative of an impending relapse. Family members are also provided with information on the diathesis-stress model of schizophrenia including genetic vulnerability as well as environmental factors that can exacerbate the illness. Families also learn about the impact that the family environment can have on the patient's course of illness.

*Religion/Spirituality (module three):* The objective of the third module is to aid family members in tapping into spiritual or existential beliefs they have which may serve as an adaptive coping skill or resource in dealing with the illness. During this module, participants are asked to share a history of their spiritual beliefs, practices, and values. The therapist uses handouts with open-ended questions to help guide the discussion about

participants' beliefs about God or other supreme being and their perspective on the meaning of life. Participants are also asked to discuss the meaning of spiritual concepts such as forgiveness, empathy, gratitude, generosity, compassion, and other values that the family finds important. Family members are encouraged to discuss spiritual practices that they currently use or would like to use such as prayer, meditation, yoga, volunteering in the community, or attending religious services. Family members are encouraged to identify how becoming involved in (or reconnecting with) these activities might be beneficial to them and then attempt to engage in the activities more often. It is important to note that therapists do not push or encourage any particular set of religious beliefs but instead, attempt to discuss the aforementioned concepts in the context of the family's existing religious or spiritual beliefs. If families or certain family members do not subscribe to a particular religion or do not wish to discuss their religious beliefs, the therapist then provides a parallel set of handouts which discuss existential and philosophical beliefs. Many of the concepts and values previously mentioned in the religious handouts (e.g., forgiveness, gratitude, compassion) can be discussed in either set of handouts and regardless of participant spiritual or religious beliefs. During this module, the therapist attempts to foster adaptive spiritual beliefs while attempting to reframe any maladaptive uses of religion such as passive use of religious practices (i.e., "I only need to pray about it and God will take care of everything.") or unhelpful beliefs (i.e., "Mental illness is a punishment from God.").

*Communication Training (module 4):* The last two modules of CIT-S are also largely drawn from previously developed interventions which have demonstrated strong empirical support in families coping with schizophrenia and bipolar disorder (Falloon et

al., 1984; Miklowitz & Goldstein, 1997). In the communication-training module, family members learn a specific set of skills designed to help families express themselves and support each other more effectively. This module discusses the techniques of active listening, expressing positive and negative feelings, and making requests for behavioral change. Family members are provided with handouts that list step-by-step instructions for how to use these skills effectively. Example statements are also listed for each skill. Once family members are familiar with the techniques, they engage in in-session role-play activities in order to practice the newly acquired skills. Family members are also encouraged to practice the skills at home with activities such as “Catch someone pleasing you this week.”

*Problem-Solving (module five):* In the final module of treatment, family members are taught a systematic way to enhance their problem-solving skills and apply them to the challenges associated with coping with schizophrenia. Through use of a step-by-step handout, family members work together to identify the problem, brainstorm all possible solutions, evaluate each solution, choose the optimal solution or solutions, and then create a strategy and plan for implementing the chosen solution. Family members are asked to provide example problems from their lives and discuss them in-session so that they can become familiar with the problem-solving system and work on solving a real problem together. This module creates an opportunity for family members to collaborate and strategize together and come up with a plan that is acceptable and feasible to all family members.

*Psychoeducational Treatment Comparison Condition (PSY-ED)*

The comparison treatment condition (PSY-ED) is identical in format to the psychoeducational module of CIT-S (please see above). The PSY-ED treatment condition is covered over the course of 3 weekly sessions with each session lasting 60-75 minutes in duration. PSY-ED is also provided in either English or Spanish. Short-term family psychoeducational interventions have demonstrated efficacy and benefits for patients and caregivers alike (e.g., Pitschel-Walz et al., 2001; Weisman de Mamani et al., 2014). Thus, the PSY-ED condition was chosen as the comparison condition for CIT-S to determine if CIT-S leads to improvements above and beyond a short course of family psychoeducation (Weisman de Mamani et al., 2014).

*Attrition*

For families in the PSY-ED treatment condition, treatment completion was defined as attending all three therapy sessions. If PSY-ED families left treatment at any time point after their baseline assessment/randomization to treatment condition but before the third and final session of PSY-ED, they were considered a non-completer. For families in the CIT-S condition, treatment completion was defined as attending all 15 therapy sessions. Families that left treatment any time after the baseline assessment/randomization to treatment condition but before the fifteenth and final therapy session were considered non-completers. In the full sample of CIT-S and PSY-ED families combined (n= 115), 52 families completed treatment (45.2%) and 63 families dropped out prematurely (54.8%). Of the 64 CIT-S families, 26 families completed treatment (40.6%) and 38 families dropped out prematurely (59.4%). Of the 51 PSY-ED families, 26 families completed treatment (51.0%) and 25 families dropped

out prematurely (49.0%). This information is summarized in Table 1 (pg. 117).

Additionally, the number of therapy sessions that families attended was also documented.

### *Translation of Materials*

All study materials including consent forms, assessment measures, and therapy materials were provided in either English or Spanish. Materials were translated from English to Spanish utilizing an editorial board approach. The editorial board was comprised of individuals from diverse Hispanic/Latino backgrounds including Cuba, Colombia, Nicaragua, Costa Rica, Mexico, and Puerto Rico. This translation method is considered to be more effective than translation-back translation as the review board takes into account within-group language variations (Geisinger, 1994). Study materials were first translated into Spanish by a native Spanish speaker. Each member of the editorial review board then independently reviewed the Spanish versions and compared them to the English versions. The review board would then convene and discuss any discrepancies with the goal of having materials written in the most generic and universally understood wording. It was also important that the wording in the Spanish versions of the documents continued to accurately reflect the original English meaning of the constructs. The editorial review board continued to meet and compare the Spanish and English versions until a consensus was reached on all remaining discrepancies.

### *Informed Consent*

All informed consent forms were approved by the University of Miami Institutional Review Board. Prior to participation in the study, participants were provided with a consent form and a research associate verbally explained the key points of the form to them. Participants had an opportunity to read the form, ask any questions, and if

they agreed to all study information, sign the consent form. Participation in the current study was completely voluntary and individuals were aware that they could choose to discontinue at any point without penalization.

#### *Eligibility for the Current Study*

Patients for the current study were required to meet DSM lifetime criteria for a schizophrenia or schizoaffective diagnosis. A semi-structured interview, the Structured Clinical Interview for DSM-IV-TR, Patient Edition (SCID-I/P, Version 2.0), Psychotic Symptoms module (First, Spitzer, Gibbon, & Williams, 2002) was used to determine patient eligibility for the current study. The SCID-I/P has previously demonstrated high inter-rater reliability for both symptoms and diagnoses (Ventura, Liberman, Green, Shaner, & Mintz, 1998). In order to determine inter-rater reliability, the Principal Investigator (Amy Weisman de Mamani) and all other interviewers for the current study, watched six videotapes of SCID-I/P interviews and provided their independent determinations of patient diagnoses. Inter-rater agreement for the current study using Cohen's Kappa was 1.0.

#### *Measures*

Participants completed several paper and pencil self-report measures as a part of the baseline assessment interview. However, only measures relevant to the current study are discussed below (please see appendix starting on page 79 for copies of all measures). Due to participant variability in reading fluency, assessments were conducted by bilingual research associates and all measures were administered in a verbal interview format in which the assessor recorded all participant responses.



### *Sociocultural Variables*

#### *Patient and Caregiver Family Cohesion*

Perceptions of family unity were measured with the Cohesion subscale of the Family Environment Scale (FES; Moos & Moos, 1981). The subscale is comprised of 9 true/false statements which assess the degree to which family members are committed to and provide help and support to each other (Moos & Moos, 1976). Sample items include, “Family members really back each other up,” “Family members really help and support one another,” and “There is a feeling of unity and cohesion in our family.” Items were coded such that responses indicative of greater perceptions of family cohesion were awarded one point and responses of less perceived family cohesion were awarded zero points. The 9 items were summed for a total score in which higher total scores were indicative of greater perceived family cohesion. The psychometric properties of the FES have been validated in several languages (i.e., English, Spanish, Chinese) and several ethnicities (Chinese, Hispanics/Latinos, African-Americans; McEachern & Kenny, 2002; Phillips, West, Shen, & Zheng, 1998; Weisman & López, 1996). The FES is reported to have adequate to good internal reliability with Cronbach’s alpha values ranging from .64-.78 (Moos & Moos, 1976; Weisman, Rosales, Kymalainen, & Armesto, 2005). Internal reliability for the current study was assessed using Cronbach’s alpha (Patients Cronbach’s alpha = .81; Caregivers Cronbach’s alpha = .66).

#### *Interdependence and Independence*

Patient and caregiver interdependence and independence were assessed by the Measurement of Independent and Interdependent Self-Construal Scale (SCS; Singelis, 1994). The SCS is comprised of 24 items designed to assess both independent values

(i.e., separateness and uniqueness of the individual) and interdependent values (i.e., connectedness and relatedness). Participants were asked to rate their agreement with the 24 statements through use of a 7-point Likert scale with “1” indicating strong disagreement to “7” indicating strong agreement. Sample items include: “It is important for me to maintain harmony within my group” (strong agreement would be indicative of a greater interdependent self-construal) and “I enjoy being unique and different from others in many respects” (greater agreement with this statement would be indicative of a greater independent self-construal). The SCS provides scores for the independent and interdependent subscales. Scores for both subscales range from 12 to 84 with higher overall subscale scores being indicative of greater independent or interdependent self-construals. Internal reliability using Cronbach’s alpha is reported to be .74 for the interdependent subscale and .70 for the independent subscale (Singelis, 1994). Internal reliability for the current study was assessed using Cronbach’s alpha (Interdependent subscale: Patients Cronbach’s alpha = .82, Caregivers Cronbach’s alpha = .72; Independent subscale: Patients Cronbach’s alpha = .79, Caregivers Cronbach’s alpha = .56).

#### *Religiosity/Spirituality*

#### *Religious/Moral Values*

Patient and caregiver religiosity was assessed using the Moral-Religious Emphasis subscale of the FES (Moos & Moos, 1981). This subscale is designed to assess the degree to which family members actively discuss and emphasize ethical and religious matters (Moos & Moos, 1976). Similar to the family cohesion subscale of the FES, this subscale consists of 9 T/F items which were summed and calculated such that higher

scores were indicative of greater religious and moral emphasis. Sample item: “Family members attend church, synagogue, or Sunday School fairly often.” Internal reliability for the subscale is reported to have a Cronbach’s alpha of .78 (Moos & Moos, 1981). Internal reliability for the current study was calculated using Cronbach’s alpha (Patients Cronbach’s alpha = .72, Caregivers Cronbach’s alpha = .64).

### *Religious Coping*

Adaptive and maladaptive religious coping were measured with the Religious Coping Activities Scale (RCAS; Pargament et al., 1990). The RCAS is comprised of 29 statements in which participants rate the extent to which the item is or is not related to their religious coping. Responses choices are: “not at all,” “somewhat,” “quite a bit,” or “a great deal.” The RCAS contains 6 subscales: 1) the Spiritual Based Coping subscale (12 items e.g., “Used my faith to help me decide how to cope with the situation.”), 2) the Good Deeds subscale (6 items e.g., “Tried to be less sinful.”), 3) the Discontent subscale (3 items e.g., “Felt angry with or distant from God.”), 4) the Interpersonal Religious Support subscale (2 items e.g., “Received support from other members of the church.”), 5) the Plead subscale (3 items e.g., “Bargained with God to make things better.”), and 6) the Religious Avoidance subscale (3 items e.g., “Prayed or read the Bible to keep my mind off my problems.”). The RCAS yields 6 subscale scores in which higher subscale scores are indicative of greater use of that type of religious coping activity. For the current study, the Spiritual Based Coping, Good Deeds, and Interpersonal Religious Support subscales were indicative of adaptive religious coping whereas the Discontent, Plead, and Religious Avoidance subscales represented maladaptive religious coping. Internal reliability for the subscales is reported to range from adequate to excellent by the

scale's developers (Spiritual Based Coping Cronbach's alpha = .92, Good Deeds Cronbach's alpha = .82, Discontent Cronbach's alpha = .68, Interpersonal Religious Support Cronbach's alpha = .78, Plead Cronbach's alpha = .61, Religious Avoidance Cronbach's alpha = .61; Pargament et al., 1990). Internal reliability for the current study was calculated using Cronbach's alpha (Patients: Spiritual Based Coping Cronbach's alpha = .95, Good Deeds Cronbach's alpha = .87, Discontent Cronbach's alpha = .68, Interpersonal Religious Support Cronbach's alpha = .86, Plead Cronbach's alpha = .69, Religious Avoidance Cronbach's alpha = .72; Caregivers: Spiritual Based Coping Cronbach's alpha = .95, Good Deeds Cronbach's alpha = .82, Discontent Cronbach's alpha = .64, Interpersonal Religious Support Cronbach's alpha = .88, Plead Cronbach's alpha = .70, Religious Avoidance Cronbach's alpha = .80).

#### *Covariates*

##### *Demographic Information*

Participants completed a demographics questionnaire in which they provided information including age, gender, ethnicity, primary language, marital status, years of education, occupation, identified religion (if any), and hours of social contact with the patient.

##### *Patient Medication Adherence*

The Medication Adherence Scale (MARS; Thompson, Kulkarni, & Sergejew, 2000) was used to assess patient adherence to their prescribed antipsychotic medication regimen. The MARS includes 10 yes/no items such as, "Sometimes if you feel worse when you take the medicine, do you stop taking it?" and "I feel weird, like a 'zombie,' on medication." Adherent responses were scored as a 1 and non-adherent responses were

scored as a 0. Total scores were calculated by summing the 10 items. Higher scores were indicative of greater adherence to antipsychotic medication regimen. Thompson et al. (2000) report adequate construct validity and an internal reliability of .75 using Cronbach's alpha. Internal reliability for the current study was calculated using Cronbach's alpha (Patients Cronbach's alpha = .51).

#### *Patient Symptom Severity*

Severity of patient psychotic symptoms was measured through use of the Brief Psychiatric Rating Scale (BPRS; Lukoff, Nuechterlein, & Ventura, 1986; Overall & Gorham, 1962). The BPRS is a 24-item, semi-structured interview which assesses the following eight areas: unusual thought content, hallucinations, conceptual disorganization, depression, suicidality, self-neglect, bizarre behavior, and hostility. Each of the 24 items is assessed using a 7-point anchor rating with 1 being indicative of a symptom being "not present" to 7 indicating an "extremely severe" level of the symptom. Total scores on the BPRS were obtained by summing scores on all 24 items with higher scores indicating greater symptom severity. The BPRS is reported to have good reliability and has been reported as having intraclass coefficients ranging from .74-1.00 on scale items (Weisman et al., 2005). The Principal Investigator (Amy Weisman de Mamani) completed a UCLA BPRS training and quality assurance program and has demonstrated reliability with the program's creator, Dr. Joseph Ventura. Dr. Weisman de Mamani trained all graduate student interviewers. Interviewers then coded six training videotapes selected by Dr. Joseph Ventura. Intraclass correlations between interviewers and consensus ratings of Dr. Ventura ranged from .79 to .98 for total BPRS scores.

*Patient and Caregiver Substance Use*

Patient and caregiver drug use and abuse was measured using the Drug Abuse Screening Test (DAST; Skinner, 1982). The DAST consists of 20 yes/no items and yields a score indicative of the degree to which drug use or misuse is causing problems in the individual's life. The DAST does not obtain information on the types of drugs being used but instead inquires about legal problems, issues in social relationships, employment history, and physical health symptoms or conditions related to drug use. Example items include, "Have you lost a job because of drug use?" "Have you been arrested of possession of illegal drugs?" and "Have you experienced withdrawal symptoms (felt sick) when you stopped taking drugs?" A total score is calculated by summing all 20 items (2 items are reverse-scored) in which a higher score is indicative of greater severity of problems related to drug abuse/misuse. A score of 0 indicates no reported drug-related problems whereas scores ranging from 1-5 indicate low severity, scores of 6-10 represent intermediate severity and likely indicate that the individual meets DSM criteria for a substance use disorder, scores of 11-15 indicate substantial severity, and scores of 16-20 indicate severe levels of problems which likely warrant intensive intervention (Skinner, 1982). The DAST is reported to have adequate concurrent, convergent, and discriminant validity as well as high internal reliability with a Cronbach's alpha value of .92 (Gavin, Ross, & Skinner, 1989; Skinner, 1982). Internal reliability for the current study was assessed using Cronbach's alpha (Patients Cronbach's alpha = .93, Caregivers Cronbach's alpha = .91).

## **Chapter 3**

### **Proposed Analytic Plan**

#### *Preliminary Analyses*

Statistical analyses were conducted using SPSS statistics software, Version 22. All continuous study variables (age, medication adherence, symptom severity, substance abuse, family cohesion, interdependence, independence, religiosity, religious coping) were calculated such that higher scores were indicative of higher levels of the constructs (e.g., higher levels of interdependence, greater symptom severity). Categorical study variables (ethnicity, level of education, gender, attrition) were dummy-coded. First, all variables were assessed for normality and were transformed, if necessary. Non-normality was identified when univariate values of 2.0 or greater were present for skewness and values of 7.0 or greater were present for kurtosis (Curran, West, & Finch, 1996). Data was also examined for potential outliers. Next, in line with prior research and in order to identify any potential covariates, the relationships among variables previously found to be associated with attrition (age, gender, education, ethnicity, substance abuse, patient medication adherence, patient symptom severity) were examined in both patients and caregivers. In order to determine whether these relationships differed by treatment condition, these relationships were examined in the full sample (CIT-S and PSY-ED families combined) as well as separated by treatment condition. Any variable found to be significantly associated with family attrition status in the current study was statistically controlled for in the primary analyses.

## *Primary Analyses*

### *Binary Logistic Regression*

A series of binary logistic regression analyses was conducted in order to examine study hypotheses 1-5. Logistic regression was chosen over other statistical techniques that can be used for data with a dichotomous dependent variable since logistic regression does not produce probabilities beyond 0 to 1, does not have restrictive assumptions about independent variables, and independent variables can be categorical or continuous (Howell, 2010). First, each predictor variable was examined separately to assess its relationship to attrition (while controlling for significant covariates). Attrition was the dichotomous dependent variable in which families were coded as either “completers” (0) or “dropouts” (1). As our outcome variable of interest was attrition, we first examined these relationships collapsed across the CIT-S and PSY-ED treatment conditions. We also separated the data by treatment condition and re-ran the analyses. Attrition status was regressed upon each of the following variables for both patients and caregivers: FES Family Cohesion, FES Religiosity, SCS Interdependence, SCS Independence, adaptive and maladaptive religious coping as measured by the six subscales of the RCAS (Spiritual Based Coping, Good Deeds, Discontent, Interpersonal Religious Support, Plead, and Religious Avoidance). Covariates found to be significantly related to attrition status were entered in step 1 in order to first determine the percentage of variance in attrition (Nagelkerke  $R^2$ ) explained by covariates alone. The Hosmer and Lemeshow goodness-of-fit test and the percentage of correctly classified cases were also examined. If the model fit the data, results from Wald’s  $X^2$  tests were examined for each significant covariate. Odds Ratio (Exp(B)) and confidence intervals were also examined and



interpreted. In step 2, an individual predictor variable was added. Once again, results from the Hosmer and Lemeshow test were examined to ensure the model fit the data. -2 Log Likelihood was examined in order to determine if the addition of the primary study variable significantly contributed to the model. Nagelkerke  $R^2$ , overall model statistics, and the percentage of correctly classified cases were also examined. Next, results from the Wald's  $X^2$  test for the primary study variable were examined to determine if the variable was a significant predictor of attrition. If so, Odds Ratios and confidence intervals were provided and interpreted. Each univariate logistic regression analysis for each independent variable provided an initial "unadjusted" view of the relationship between the variable and attrition (controlling for any covariates). Next, in order to evaluate a more comprehensive model, binary logistic regression was again used in which attrition status was regressed upon all variables found to be significantly associated with attrition in the first round of regression analyses. The overall model (all significant predictor variables plus potential covariates) was examined to determine its ability to explain variability in attrition status. -2 Log Likelihood was again examined in order to determine if the addition of the primary study variable(s) significantly contributed to the model over and above the covariates entered in step 1. Nagelkerke  $R^2$ , overall model statistics, and the percentage of correctly classified cases were also examined. For variables that remained significant predictors of attrition, results from the Wald's  $X^2$  test, Odds Ratios, and confidence intervals were provided and interpreted. Results were used to determine which variables had the strongest relationships with attrition status and if the independent variables were stronger predictors when compared to covariates significantly related to attrition.

### *Multiple Linear Regression*

A series of hierarchical multiple linear regression analyses was also conducted with the families randomized to the CIT-S treatment condition. The number of therapy sessions that the family attended (0 to 15) was the dependent variable which was regressed upon the independent variables. As the PSY-ED treatment condition consisted of only three therapy sessions with little variability in the number of sessions that could be attended (0 to 3), these families were not included in the linear regression analyses. Covariates that were identified as significantly associated with family attrition status in the CIT-S treatment condition were also controlled for in the linear regression analyses. However, the relationships between the covariates and number of therapy sessions attended were also examined in order to ensure that the same relationships were significant and in the same direction. In step 1 (covariates only), the significance of the overall model and percentage of variability in the number of family therapy sessions attended accounted for by the linear combination of the covariates were examined. The covariates that were significant predictors of the number of family therapy sessions attended were identified and *t*-test results, standardized beta weights, and partial *r* values were examined. In step 2, individual primary study variables were added to determine if they predicted the number of family therapy sessions attended over and above the covariates.  $R^2_{\text{CHANGE}}$ ,  $F_{\text{CHANGE}}$ , overall model results,  $R^2$ , and  $R^2_{\text{ADJUSTED}}$  were examined and interpreted. *T*-test results, standardized beta weights, and partial *r* values were provided and interpreted for all significant covariates and primary study variables. Next, all primary study variables that were determined to be significant predictor variables of the number of family therapy sessions attended were entered into another linear

regression analysis in which the significant covariates were entered in step 1 and the significant primary study variables were entered in step 2. Once again,  $R^2_{\text{CHANGE}}$ ,  $F_{\text{CHANGE}}$ , overall model results,  $R^2$ , and  $R^2_{\text{ADJUSTED}}$  were examined and interpreted to determine if the linear combination of the primary study variables predicted the number of family therapy sessions attended over and above the linear combination of covariates.  $T$ -test results, standardized beta weights, and partial  $r$  values were provided and interpreted for all significant covariates and primary study variables that remained significant in the full model.

### *Survival Analysis*

Survival analysis is a set of methods that are generally used for analyzing data where the outcome variable is the time until occurrence of an event of interest (e.g., time to death, in medical studies; Clark, Bradburn, Love, & Altman, 2003). Survival analysis has also been applied to the study of premature termination from psychotherapy in which case, the “event” is defined as premature dropout from therapy (e.g., Corning & Malofeeva, 2004). Thus, on an exploratory basis, we applied survival analysis techniques to the CIT-S treatment condition in an attempt to determine which session(s) the majority of families dropped out of treatment and if this coincided with any key time points in treatment (e.g., before the culturally informed sessions or towards the end of treatment when they may feel as if they have learned everything they need to know or are feeling treatment fatigued). Survival analysis techniques were also used to identify between-group differences on primary study variables. For example, did the proportion of treatment completers differ when caregivers had high versus low levels of endorsement on a particular variable?

Only families randomized to the CIT-S condition were examined in this exploratory survival analysis. As the PSY-ED treatment condition only contains 3 sessions, there was little variability as to when families could drop out of treatment. As previously mentioned, families who did not complete all 15 psychotherapy sessions of CIT-S were considered dropouts and this was coded according to number of sessions they attended (i.e., 0, 1, 2...etc.). We were interested in the cumulative proportion of families who remained in CIT-S until its completion (i.e., the full 15 sessions of treatment). Thus, using the data from the families randomized to the CIT-S treatment condition, their dropout or completer status, as well as how many sessions they completed, we used the Life Tables cumulative survival graph in order to determine, overall, which sessions families tend to drop out most frequently, without taking into consideration any other variables (e.g., demographic or primary study variables). The number and proportion of families that dropped out of these sessions, the proportion of the sample that remained in treatment (“survived”), probability density, and hazard rates are provided for the highest-risk sessions. Probability density values provide an estimate of the probability of premature termination during a specific interval (i.e., therapy session number) whereas hazard rate values provide an estimate of experiencing the “event” (dropout) during the interval of interest (i.e., a specific session), conditional upon surviving until the start of that specific interval.

Next, a series of Kaplan-Meier analyses was conducted to determine if there were significant differences in the number of therapy sessions attended between high and low levels of each significant covariate and predictor variable from the hierarchical linear regression analyses. Each variable was dichotomized into “low” and “high” levels of that

variable, based on histograms and median scores. Using Log Rank (Mantel-Cox) test results, these analyses were used to determine if there were significant between-group differences in the number of therapy sessions attended. If test results were significant, mean estimates of the number of therapy sessions attended, standard errors (S.E.), the median number of sessions attended, and confidence intervals were provided for each group. Additionally, a graph of the cumulative probability of survival was provided for each analysis that demonstrated significant between-group differences. The graphs demonstrate the proportion of each group that completed all 15 therapy sessions and visually demonstrate sessions that experienced a large number of premature dropouts.

Next, the significant covariates and predictor variables were entered into a series of Cox proportional hazards regression analyses. The Cox regressions allowed us to examine the relationships between study variables and family attrition status while controlling for the previously identified covariates. We were also able to examine the study variables in both dichotomized and continuous forms. The covariates identified in the CIT-S logistic and linear regression analyses were entered in step 1 (caregiver age, patient and caregiver ethnicity, caregiver education, patient symptom severity) and individual study variables entered into step 2. The overall model as well as chi-square change test results were examined in order to determine if the overall model fit the data and if the addition of the study variable in step 2 significantly contributed to the model. If significant, hazard ratios (HR), 95% confidence intervals (CI), and *p*-values were provided and interpreted. As low power could have influenced results, variables were examined in both their dichotomized and continuous forms to increase power and ensure that no significant relationships were missed. For variables that were not significant

predictors of attrition,  $p$  values for both dichotomized and continuous results are provided.

### *Content Analysis*

A content analysis was conducted by examining all available notes from the study's telephone log, therapy session notes, and case notes on families that dropped out prematurely from either the CIT-S or PSY-ED family treatments ( $n= 63$ ). Families that provided a common reason (e.g., schedule conflicts) were grouped together. The number and proportion of families that provided each reason were documented. Several families provided unique reasons that could not be grouped with other families. These cases were allowed to stand alone in the content analysis. When families did not provide a reason for their premature termination from treatment or we were no longer able to get in contact with the family, these cases were considered "lost to follow-up."

## Chapter 4

### Results

#### *Preliminary Analyses*

##### *Missing Data*

All study variables had missing data. However, the data did not appear to be affected by systematic response biases and Little's Missing Completely at Random (MCAR) test was not significant, which supports this assertion,  $\chi^2(778) = 804.977, p = .244$ . Listwise deletion was used for all analyses. However, all analyses were also examined utilizing mean imputation. As results were nearly identical in both approaches, only the results from listwise deletion are presented.

##### *Normality of Study Variables*

All variables were assessed for normality and examined for univariate values of 2.0 or larger for skewness and/or kurtotic values of 7.0 or larger (Curran et al., 1996). The majority of variables had skew and kurtosis values within a conservative -1 to +1 range. However, DAST scores for both caregivers and patients were indicative of non-normality issues (patient DAST skew = 2.059, kurtosis = 3.252; caregiver DAST skew = 3.214, kurtosis = 11.449). Values indicated that scores were positively skewed and leptokurtic. A square root transformation was used for both patients and caregivers DAST scores which improved skew and kurtosis to acceptable values (patient DAST skew = 1.199, kurtosis = .186; caregiver DAST skew = 1.713, kurtosis = 2.184). Thus, the square root transformed values for patient and caregiver DAST scores were used in all primary analyses. Table 2 (patients, pg. 117) and Table 3 (caregivers, pg. 118) contain descriptive statistics for all continuous variables (n, mean, standard deviation, possible

range, observed range, skew, kurtosis). Frequency information for demographic variables is listed in table 4 (pg. 119) for patients (gender, ethnicity, education) and in table 5 (pg. 120) for caregivers (gender, ethnicity, education, relationship to patient, hours of weekly social contact with patient).

### *Covariates*

In order to identify potential covariates in the CIT-S and PSY-ED treatment conditions individually as well as combined, the relationships between continuous variables and family attrition status were examined through point-biserial correlations (see tables 6, 7, and 8 on pages 121 and 122 for correlation matrices). Additionally, chi-square tests of independence were conducted in order to examine the relationships between categorical variables and family attrition status and determine if higher proportions of dropout versus completer families were present in any of the categorical variables. It should be noted that for the chi-square tests between ethnicity and attrition, due to the small number of patients and caregivers who identified their ethnicity as “Other,” (3 patients, 3 caregivers), “Others” were removed from these analyses and only patients and caregivers who self-identified as Caucasian, African-American, or Hispanic/Latino were included. With regard to education, participants originally indicated their level of education through the following categories: below grade 8, grade 8 completed, some high school beyond grade 8, high school graduate, some college, college degree, or advanced degree. All education categories were used in the multiple linear regression analyses. However, due to limited power to assess each group individually in the binary logistic regression analyses, the aforementioned categories were combined and assessed by the following categories: some high school and lower,



high school graduate, and some college to advanced degree. All variables found to be significantly related to family attrition status (see below) were controlled for in our primary analyses.

In the full sample of CIT-S and PSY-ED families combined ( $n= 115$ ), patient age was positively correlated with family dropout status ( $r = .232, p = .024$ ) such that being older was associated with increased family dropout whereas caregiver age was negatively correlated with family dropout status ( $r = -.353, p < .001$ ), indicating that younger caregiver age was associated with increased family dropout. Patient psychiatric symptom severity (BPRS total scores) was also positively correlated with dropout status ( $r = .463, p < .001$ ) indicating that greater patient symptom severity scores were associated with increased family dropout. The chi-square test for patient ethnicity was significant,  $X^2(2, N=91) = 10.198, p = .006$  and indicated that Caucasians and Hispanics/Latinos had slightly larger proportions of completers (Caucasian proportion of completers = 55.0%, proportion of dropouts= 45.0%; Hispanics/Latinos proportion of completers = 52.2%, proportion of dropouts= 47.8%), whereas African-Americans had larger proportions of dropouts (84.0%) versus completers (16.0%). The test for caregiver ethnicity was also significant,  $X^2(2, N=112) = 17.711, p < .001$  and results similarly indicated that Caucasians and Hispanics/Latinos had slightly higher proportions of completers (Caucasian proportion of completers = 58.3%, proportion of dropouts= 41.7%; Hispanic/Latinos proportion of completers = 57.4%, proportion of dropouts= 42.6%) and African-Americans had larger proportions of dropouts (85.3%) compared to completers (14.7%). Results for the relationship between patient gender and attrition were also significant,  $X^2(1, N=96) = 6.940, p = .008$  and indicated that a slightly higher proportion

of families with male patients were classified as treatment completers (proportion of male completers = 52.6%, proportion of male dropouts= 47.4%) as compared to a higher proportion of family dropouts who had female patients (proportion of female completers = 25.6%, proportion of female dropouts= 74.4%). Results for the relationship between caregiver gender and attrition were also significant,  $X^2(1, N=115) = 5.165, p = .023$  but were contrary to the relationship found between attrition and patient gender such that a greater proportion of families with male caregivers were dropouts (male proportion of completers = 31.8%, male proportion of dropouts= 68.2%) as compared to a higher proportion of completer families with female caregivers (female proportion of completers = 53.5%, female proportion of dropouts= 46.5%). Results for the relationship between patient level of education and attrition were not significant ( $X^2(2, N=94) = 4.768, p = .092$ ). However, the relationship between caregiver education level and attrition was significant  $X^2(2, N=114) = 27.299, p < .001$  and indicated that families that had caregivers with higher levels of education had higher proportions of completers when compared to families that had caregivers with lower levels of education (some college to advanced degree proportion of completers = 67.2%, proportion of dropouts= 32.8%; high school graduates proportion of completers = 15.2%, proportion of dropouts= 84.8%; some high school or lower proportion of completers = 25.0%, proportion of dropouts= 75.0%).

In the subsample of PSY-ED families ( $n = 51$ ), patient age was positively correlated with dropout status ( $r = .370, p = .016$ ) such that being older was associated with increased family dropout whereas caregiver age was negatively correlated with family dropout status ( $r = -.296, p = .035$ ), indicating that older caregiver age was

associated with decreased family dropout. Patient psychiatric symptom severity (BPRS total scores) was positively correlated with dropout status ( $r = .669, p < .001$ ) indicating that greater patient symptom severity scores were associated with increased family dropout. The chi-square test between patient gender and attrition was significant,  $X^2(1, N=42) = 9.450, p = .002$  and indicated that a higher proportion of families with male patients were classified as treatment completers (proportion of completers = 73.9%, proportion dropouts = 26.1%) as compared to a higher proportion of dropout families with female patients (proportion of completers = 26.3%, proportion of dropouts = 73.7%). The other chi-square test results were not significant (caregiver gender  $X^2(1, N=51) = 3.362, p = .067$ ; patient ethnicity  $X^2(2, N=42) = 1.586, p = .452$ ; caregiver ethnicity  $X^2(2, N=51) = 3.735, p = .291$ ; patient education  $X^2(2, N=41) = .445, p = .801$ ; caregiver education  $X^2(2, N=50) = 3.320, p = .190$ ).

In the subsample of CIT-S families ( $n = 64$ ), caregiver age was negatively correlated with family dropout status ( $r = -.393, p = .001$ ) such that older caregiver age was associated with decreased family dropout. Patient psychiatric symptom severity (BPRS total scores) was positively correlated with dropout status ( $r = .334, p = .016$ ) indicating that greater patient symptom severity was associated with increased family dropout. The chi-square test for patient ethnicity was significant,  $X^2(2, N=49) = 11.072, p = .004$  and indicated that families in which patients identified as Caucasian or Hispanic/Latino had larger proportions of completers (Caucasian proportion of completers = 66.7%, proportion of dropouts = 33.3%; Hispanic/Latino proportion of completers = 56.5%, proportion of dropouts = 43.5%), whereas families in which patients identified as African-Americans had a much larger proportion of dropouts (94.1%) versus

completers (5.9%). Results for caregiver ethnicity were also significant,  $X^2(2, N=62) = 19.013, p < .001$  and similarly indicated that families in which caregivers identified as Caucasian or Hispanic/Latino had higher proportions of completers (Caucasian proportion of completers = 66.7%, proportion of dropouts= 33.3%; Hispanic/Latinos proportion of completers = 54.8%, proportion of dropouts= 37.8%). All families in which caregivers identified as African-American were coded as dropouts (100%) compared to completers (0%). Results for the relationship between caregiver education level and attrition were also significant  $X^2(2, N=64) = 29.157, p < .001$  and indicated that families in which caregivers had higher levels of education (i.e., some college to advanced degree) had higher proportions of completers (proportion of completers = 72.7%, proportion of dropouts= 27.3%) as compared to families in which caregivers were high school graduates (proportion of completers = 5.0%, proportion of dropouts= 95.0%) or had attended some high school or lower (proportion of completers = 9.1%, proportion of dropouts= 90.9%). It should be noted that in the primary analyses for the CIT-S sample, we were unable to control for patient and caregiver ethnicity due to too few numbers in the category of dropouts (e.g., zero families with African-American caregivers were completers). A similar problem arose with caregiver education. However, by combining the 3 education categories into 2 (some college to advanced degree; high school graduate or lower), the models were able to run. Additional chi-square tests of independence did not demonstrate significant differences in family attrition status (patient gender  $X^2(1, N=54) = .993, p = .319$ ; caregiver gender  $X^2(1, N=64) = 2.090, p = .148$ ; patient education  $X^2(2, N=53) = 5.200, p = .074$ ).

### *Primary Analyses*

Please note that only significant findings in our primary analyses are discussed in this dissertation for ease of readability. However, more detailed descriptions of significant models as well as tabled information on non-significant findings are located in the appendix.

### *Binary Logistic Regression*

Correlation matrices display the point-biserial correlations between family attrition status and patient and caregiver primary study variables (please see tables 9, 10, and 11 on pages 123-125). First, a series of binary logistic regression analyses were conducted. While controlling for significant covariates, each primary study variable was entered into a hierarchical logistic regression analysis in which family attrition status (completer = 0, dropout = 1) was regressed upon the covariates (step 1) and the primary study variable (step 2) in order to determine an initial “unadjusted” relationship between attrition status and the primary study variables, while controlling for the covariates. Key findings are described below and can also be found in a summary table (please see Table 12, pg. 126). The detailed descriptions of each significant relationship can be found in the appendix (starting on page 132) and include model fit statistics, percentage of variance in attrition explained, percentage of correctly classified cases, -2 Log Likelihood values, and for significant predictors, Wald  $\chi^2$  test results, B, S.E. (B), Odds Ratios, and confidence intervals. The appendix also contains tabled information on covariates found to be significant predictors of attrition (starting on page 146) as well as tabled results from each non-significant logistic regression analysis (starting on page 150).

In the full sample (CIT-S & PSY-ED combined,  $n= 115$ ), results from the individual logistic regression analyses yielded several key findings. Study hypotheses related to maladaptive religious coping were supported as results indicated that when controlling for other variables, families with caregivers who had higher scores on the RCAS subscale of Religious Avoidance were 1.427 times or 42.7% more likely to drop out of treatment prematurely when compared to families with caregivers who had lower scores. Additionally, although in the opposite direction of study hypotheses related to adaptive religious coping, results indicated that when compared to families with caregivers with lower scores, families with caregivers who had high scores on the Spiritual Based Coping, Good Deeds, and Interpersonal Religious Support subscales of the RCAS had an increased likelihood of attrition. Specifically, families with higher caregiver scores on the Spiritual Based Coping subscale were 1.140 times or 14% more likely to drop out of treatment prematurely, families with higher caregiver scores on the Good Deeds subscale were 1.252 times or 25.2% more likely to drop out, and families with higher caregiver Interpersonal Religious Support scores were 1.444 times or 44.4% more likely to drop out of treatment prematurely. Finally, contrary to study hypotheses, all patient primary study variables examined (FES Family Cohesion, FES Religiosity, SCS Independence, SCS Interdependence, all six subscales from the RCAS), and the remainder of caregiver primary study variables examined (FES Family Cohesion, FES Religiosity, SCS Independence, SCS Interdependence, RCAS Discontent and Plead subscales) were not significant predictors of family attrition status. Based on results from the individual binary logistic regression analyses, the variables found to be significant predictors of family attrition status (Caregiver RCAS Religious Avoidance, Caregiver

RCAS Spiritual Based Coping, Caregiver RCAS Good Deeds, Caregiver RCAS Interpersonal Religious Support) were then entered into a model together. However, only a handful of covariates remained significant predictors of family attrition status (caregiver gender, caregiver education, patient symptom severity).

In the subsample of PSY-ED families ( $n = 51$ ), results demonstrated partial support for study hypotheses related to an independent self-construal as families with patients who had lower SCS independence scores had a decreased likelihood of attrition when compared to families with patients who had higher independence scores. Study hypotheses related to maladaptive religious coping were supported as families in which patients had higher RCAS Religious Avoidance scores had an increased likelihood of attrition (1.822 times or 82.2% more likely to drop out of treatment prematurely). Additionally, results were in the opposite direction of study hypotheses related to adaptive religious coping as higher Caregiver FES Religiosity and higher Caregiver RCAS Spiritual Based Coping scores were both predictive of an increased likelihood of premature family dropout. Specifically, families with caregivers who had higher religiosity scores were 2.4 times more likely to drop out of treatment prematurely and families with caregivers who had higher spiritual based coping scores were 1.197 times or 19.7% more likely to drop out of treatment prematurely when compared to families with caregivers with lower scores. Finally, contrary to study hypotheses, the remainder of patient primary study variables examined (FES Family Cohesion, FES Religiosity, SCS Interdependence, all six subscales from the RCAS), and the remainder of caregiver primary study variables examined (FES Family Cohesion, SCS Independence, SCS Interdependence, the other five RCAS subscales) were not significant predictors of

family attrition status. Unfortunately, due to limited power, a full model in which all significant covariates and predictor variables were entered into a model was not possible in this subsample of PSY-ED families.

In the subsample of CIT-S families (n= 64), study hypotheses related to maladaptive religious coping were supported as families in which patients had higher RCAS Plead scores had an increased likelihood of attrition (2.051 times more likely to drop out of treatment prematurely). Additionally, results were in the opposite direction of study hypotheses related to adaptive religious coping as higher Caregiver RCAS Good Deeds scores were predictive of an increased likelihood of premature family dropout. Specifically, families with caregivers who had higher scores on the RCAS Good Deeds subscale were 1.449 times or 44.9% more likely to drop out of treatment prematurely when compared to families with caregivers with lower good deeds scores. Contrary to study hypotheses, the remainder of patient primary study variables examined (FES Family Cohesion, FES Religiosity, SCS Interdependence, all six subscales from the RCAS), and the remainder of caregiver primary study variables examined (FES Family Cohesion, SCS Independence, SCS Interdependence, the other five RCAS subscales) were not significant predictors of family attrition status. Based on the results from the individual binary logistic regression analyses in the CIT-S subsample, Patient RCAS Plead and Caregiver RCAS Good Deeds were entered into a model together with significant covariates to determine if the variables remained significant predictors of family attrition status. In support of study hypotheses related to maladaptive religious coping, Patient RCAS Plead remained a significant predictor of attrition with results indicating that families with patients who had higher Plead scores were 2.032 times more



likely to drop out of treatment prematurely when compared to families with patients with lower scores. Caregiver Good Deeds was not a significant predictor of attrition in this model.

In summary, individual binary logistic regression analyses results indicated that while controlling for the covariates that were significantly related to family attrition status, several primary study variables were significant predictors of family attrition status. In the full sample of CIT-S and PSY-ED families combined, study hypotheses 1-3 were unsupported. However, higher Caregiver RCAS Spiritual Based Coping, Caregiver RCAS Good Deeds, Caregiver RCAS Interpersonal Religious Support (results in opposite direction of study hypothesis 4) and Caregiver RCAS Religious Avoidance (study hypothesis 5 supported) were all significant predictors of an increased likelihood of family attrition. When all covariates and predictor variables found to be associated with family attrition status were entered into a model together, only a handful of covariates remained significant predictors of family attrition status. In the subsample of PSY-ED families, study hypothesis 1 was unsupported, study hypothesis 2 was partially supported as lower Patient SCS Independence was predictive of a decreased likelihood of family attrition. Higher Caregiver FES Religiosity, Caregiver RCAS Spiritual Based Coping (results in opposite direction of study hypothesis 4), and higher Patient RCAS Religious Avoidance (study hypothesis 5 supported) were significant predictors of an increased likelihood of family attrition. In the subsample of CIT-S families, study hypotheses 1-3 were unsupported. However, higher Caregiver RCAS Good Deeds (results in opposite direction of study hypothesis 4) and Patient RCAS Plead (study hypothesis 5 supported) were significant predictors of an increased likelihood of family

attrition. When entered into a model with significant covariates, Patient RCAS Plead remained a significant predictor of family attrition status (study hypothesis 5 supported) whereas Caregiver RCAS Good Deeds did not.

*Hierarchical Multiple Linear Regression (CIT-S only)*

In the subsample of CIT-S families (n= 64), a series of hierarchical multiple linear regression analyses were conducted in which the number of family therapy sessions attended was regressed upon significant covariates (step 1) and individual primary study variables (step 2). The same covariates identified in the CIT-S binary logistic regression analyses (caregiver age, patient and caregiver ethnicity, caregiver education, patient symptom severity) were controlled for in these analyses. However, the relationships between all potential covariates and the number of therapy sessions attended were first examined to ensure that these relationships remained significantly related to the number of family therapy sessions attended, in the expected direction, and that no additional relationships needed to be controlled for in the analyses. Key findings are described below and are also summarized in Table 13 (pg. 127). The detailed descriptions of each significant relationship can be found in the appendix (starting on page 132) and include model fit statistics, percentage of variability explained in number of family therapy sessions attended, and for significant predictors, *t*- test results, standardized beta weights, and partial *r* values. The appendix also includes tabled information on covariates found to be significant predictors of number of family therapy sessions attended (starting on page 146) as well as tabled results from each non-significant linear regression analysis (starting on page 150).

Results yielded several key findings: Study hypotheses related to maladaptive religious coping were supported in that higher patient RCAS Plead scores were predictive of a lower number of family therapy sessions attended. Results were in the opposite direction of study hypotheses related to adaptive religious coping as higher scores on Patient FES Religiosity, Patient RCAS Interpersonal Religious Support, Caregiver RCAS Good Deeds, and Caregiver RCAS Interpersonal Religious Support were predictive of a lower number of family therapy sessions attended. Contrary to study hypotheses, the remainder of patient primary study variables examined (FES Family Cohesion, SCS Interdependence, SCS Independence, the three remaining subscales from the RCAS), and the remainder of caregiver primary study variables examined (FES Family Cohesion, FES Religiosity, SCS Independence, SCS Interdependence, the other four RCAS subscales) were not significant predictors of the number of family therapy sessions attended. Finally, based on results from the individual linear regression analyses, a model was run in which number of family therapy sessions attended was regressed upon covariates significantly related to attrition status/number of sessions attended and all primary study variables identified as significant predictors of number of family therapy sessions attended. Study hypotheses related to maladaptive religious coping were supported as higher patient RCAS Plead scores remained predictive of fewer family therapy sessions attended. Results were in the opposite direction of study hypotheses related to adaptive religious coping as higher Caregiver RCAS Interpersonal Religious Support scores continued to be predictive of fewer family therapy sessions attended. The remaining primary study variables were not significant predictors of number of family therapy sessions attended.

*Survival Analysis*

First, in order to obtain an overall picture of the time point(s) in which the majority of families dropped out of the CIT-S treatment condition ( $n = 64$ ), the life tables function was run without any predictor variables. Results indicated that the majority of families who left treatment prematurely dropped out after randomization (session 0) and before session 1 ( $n=23$  families, proportion terminated = .36, proportion surviving = .64, probability density = .359, hazard rate = .44). Sessions 1 through 3 experienced the next highest losses of families to premature dropout. However, the likelihood of premature dropout decreased with each session (Session 1: 5 families dropped out, proportion terminated = .12, proportion surviving = .88, probability density = .078, hazard rate = .13; Session 2: 4 families dropped out, proportion terminated = .11, proportion surviving = .89, probability density = .063, hazard rate = .12; Session 3: 2 families dropped out, proportion terminated = .06, proportion surviving = .94, probability density = .031, hazard rate = .06). Results also demonstrated that no families left treatment from session 10 onwards with the proportion of those lost to premature dropout remaining the same for sessions 10 through 15 (cumulative proportion of families who remained in treatment = .41). In other words, if families were able to remain in treatment until session 10, their risk of dropout was essentially nonexistent (probability density = .000, hazard rate = .000). Please see Graph 1 (pg. 128) for life tables graph.

Next, a series of Kaplan-Meier analyses was conducted to determine if there were significant differences in the number of therapy sessions attended between high and low levels of each significant covariate and predictor variable identified from the hierarchical linear regression analyses that were conducted (caregiver education, patient symptom

severity, Patient FES Religiosity, Patient RCAS Interpersonal Religious Support, Patient RCAS Plead, Caregiver RCAS Good Deeds, Caregiver RCAS Interpersonal Religious Support).

Results of the Kaplan-Meier analysis for caregiver education (some high school or lower; high school graduate; some college to advanced degree) indicated significant between-group differences (Log Rank (Mantel-Cox) test,  $\chi^2(2) = 35.942$ ,  $p < .001$ ) with families with caregivers who had some college to an advanced degree with a higher average number of sessions attended when compared to caregivers with lower levels of education (some college to advanced degree, Mean Estimate = 11.394 sessions, S.E. = 1.053, Median = 15 sessions, 95% CI: 9.330 – 13.458; high school graduates, Mean Estimate = 1.550 sessions, S.E. = .798, Median = 0 sessions, 95% CI: 0 - 3.115; some high school and lower, Mean Estimate = 2.455 sessions, S.E. = 1.282, Median = 1 session, 95% CI: 0 – 4.966). Please see Graph 2 (pg. 129) for cumulative probability of survival for each group.

Results of the Kaplan-Meier analysis for Patient RCAS Plead (dichotomized into high and low groups) indicated significant between-group differences (Log Rank (Mantel-Cox) test,  $\chi^2(1) = 12.161$ ,  $p < .001$ ) with families with patients who had lower plead scores attending a greater number of therapy sessions when compared to families in which patients had higher scores (low scores, Mean Estimate = 8.333 sessions, S.E. = 1.355, Median = 15 sessions, 95% CI: 5.678 – 10.989; high scores, Mean Estimate = 2.320 sessions, S.E. = .859, Median = 0 sessions, 95% CI: .636 – 4.004). Please see Graph 3 (pg. 130) for cumulative probability of survival for each group.

### Results of the Kaplan-Meier analysis for Caregiver RCAS Good Deeds

(dichotomized into high and low groups) indicated significant between-group differences (Log Rank (Mantel-Cox) test,  $\chi^2(1)= 16.153, p < .001$ ) in which families with caregivers who had lower good deeds scores attended a greater number of therapy sessions when compared to families in which caregivers had higher scores (low scores, Mean Estimate = 10.857 sessions, S.E. = 1.189, Median = 15 sessions, 95% CI: 8.528 – 13.187; high scores, Mean Estimate = 3.611 sessions, S.E. = .955, Median = 0 sessions, 95% CI: 1.739 – 5.483). Please see Graph 4 (pg. 131) for cumulative probability of survival for each group.

Results of the Kaplan-Meier analyses for the following variables that were dichotomized into high and low scores did not demonstrate significant between-group differences: patient psychiatric symptom severity (Log Rank (Mantel-Cox) test,  $\chi^2(1)= 1.655, p = .198$ ), Patient FES Religiosity (Log Rank (Mantel-Cox) test,  $\chi^2(1)= 2.302, p = .129$ ), Patient RCAS Interpersonal Religious Support (Log Rank (Mantel-Cox) test,  $\chi^2(1)= 3.720, p = .054$ ), and Caregiver RCAS Interpersonal Religious Support (Log Rank (Mantel-Cox) test,  $\chi^2(1)= 2.678, p = .102$ ).

Next, all of the aforementioned variables were entered into a series of Cox proportional hazards regression analyses with covariates in step 1 and individual predictor variables in step 2. While controlling for the other covariates, caregiver education was a significant predictor of family attrition ( $\chi^2(2)= 7.610, p = .022$ ) with families in which caregivers with some college to advanced degrees had a decreased likelihood of attrition (HR = .193, 95% CI = .057 to .655,  $p = .008$ ). Patient RCAS Plead was also a significant predictor of family attrition ( $\chi^2(1)= 4.272, p = .039$ ) such that

families with patients with higher plead scores had an increased likelihood of attrition (HR = 2.330, 95% CI = 1.030 to 5.270,  $p = .042$ ). Patient FES Religiosity was also a significant predictor of family attrition ( $\chi^2(1) = 4.469$ ,  $p = .035$ ) in which families with patients with higher religiosity scores had an increased likelihood of attrition (HR = 2.846, 95% CI = 1.016 to 7.974,  $p = .047$ ).

The remaining variables were not significant predictors of family attrition, regardless of examining them in either their dichotomized or continuous forms: Caregiver RCAS Good Deeds (dichotomized  $p = .077$ , continuous  $p = .247$ ), Caregiver RCAS Interpersonal Support (dichotomized  $p = .151$ , continuous  $p = .081$ ), Patient RCAS Interpersonal Support (dichotomized  $p = .203$ , continuous  $p = .280$ ), Patient Symptom Severity (dichotomized  $p = .345$ , continuous  $p = .378$ ).

### *Content Analysis*

A content analysis was conducted by examining the telephone log, therapy session, and case notes available on families that dropped out prematurely from either the CIT-S or PSY-ED family treatments ( $n = 63$ ). The majority of families were simply lost to follow up and provided no information as to why they left prior to treatment completion. However, several families did provide reasons as to why they could no longer continue with therapy sessions. The reasons are provided below along with the number and percentage of families that provided this reason.

- 47 families (75%): Lost to follow up, unable to contact (e.g., no longer taking our calls, phone disconnected, etc.)
- 4 families (6.3%): Transportation difficulties getting to the sessions and/or financial strain of travel to sessions

- 4 families (6.3%): Busy work schedule, schedule conflicts, lack of time
- 2 families (3.2%): Patient was hospitalized, family decided to discontinue treatment
- 2 families (3.2%): Relationship difficulties, divorce
- 1 family (1.6%): Moved out of town
- 1 family (1.6%): Patient incarcerated, family decided to discontinue treatment
- 1 family (1.6%): Elderly, too far to drive, recent health issues
- 1 family (1.6%): Mother of the patient reported that the patient had been cured of illness due to church involvement and thought that the treatment was no longer needed



## Chapter 5

### Discussion

The primary objective of the current study was to pinpoint patient and caregiver sociocultural variables that predict attrition (premature dropout) from family interventions for schizophrenia. We hypothesized that for families in two different treatment conditions (CIT-S and PSY-ED), for both patients and caregivers, higher levels of interdependence, family cohesion, and adaptive religious coping would be associated with a decreased likelihood of attrition/a greater number of family therapy sessions attended. We also hypothesized that higher levels of independence and maladaptive religious coping would be associated with an increased likelihood of attrition/a fewer number of family therapy sessions attended.

#### *Adaptive and Maladaptive Religious Coping*

Surprisingly, and contrary to expectations, one of the most consistent findings in this study was that families with more religious individuals (patients and caregivers alike) were more likely to drop out of treatment prematurely and attend fewer family therapy sessions. This pattern was observed in both CIT-S and PSY-ED families, across adaptive and maladaptive religious coping variables, and across analyses.

Prior research has demonstrated that for many individuals, the concepts of health and illness are closely tied to religion/spirituality. For example, in a survey conducted by Bearon and Koenig (1990), 77.5% of participants endorsed the belief that, “Health is a blessing or a gift from God.” and 33% of their sample agreed with the statement, “If people are disobedient to God, they might be punished with sickness.” It seems plausible that religious beliefs would influence treatment-related decisions in individuals who are

strongly connected to their faith and have health and religious beliefs that are inextricably linked (Zafar et al., 2008). Many minorities such as Hispanics/Latinos and African-Americans believe that mental illness is “an issue of faith” (Avent, Cashwell, & Brown-Jeffy, 2013; Campbell & Long, 2014). Unfortunately, individuals who attempt to treat their mental illness with faith and prayer but continue to experience distressing symptoms may be met with unhelpful statements/beliefs which contribute to feelings of shame and guilt (e.g., “You didn’t pray hard enough.” or “You don’t have enough faith;” Campbell & Long, 2014). Thus, for many, the stigma and shame associated with having a mental health problem may represent major barriers to seeking or sticking with professional, secular care (Avent et al., 2013; Hamid & Furnham, 2013).

Families in the current study were able to overcome the aforementioned barriers and seek professional mental healthcare. However, families with religious caregivers and/or patients were at an increased likelihood of dropping out of treatment prematurely and attended fewer therapy sessions when compared to their less religious counterparts. Interestingly, even though religion/spirituality is an important culturally informed module that is also infused throughout the CIT-S treatment, families with religious caregivers or patients were still at an increased likelihood of premature dropout. In other words, religious families had an increased likelihood of attrition, regardless of which treatment condition they were in and regardless of whether religion/spirituality was one of the topics covered.

Study results may be explained by the “religiosity gap” theory. This theory posits that religious individuals may expect or assume that there will be fundamental differences in belief systems between them and their mental health professionals or, that their

therapist may attempt to dissuade them from their faith (Crosby & Bossley, 2012). Thus, it is possible that religious families did not feel comfortable discussing their faith or religious beliefs with therapists from the current study. Instead of censoring themselves, feeling uncomfortable, or feigning agreement with the views presented in therapy regarding the etiology and treatment of schizophrenia, they may have simply preferred to leave in order to find a treatment that was more congruent with their beliefs (Crosby & Bossley, 2012).

Results from our survival analyses support this assertion as most families who left treatment did so within the first three sessions. Results seem to suggest that families were willing to give treatment a try but ultimately determined that it was not a good fit. Interestingly, results also demonstrated that once CIT-S families made it to session 10 and had completed the religion/spirituality module, the likelihood of leaving treatment prematurely dropped to zero. This pattern seems to suggest that once therapists were able to demonstrate their openness, acceptance, and willingness to explore a family's belief system, the family was then willing to complete the full course of treatment. Results from our content analysis also seem to lend support to the religiosity gap theory. Although the majority of families did not provide an exact reason as to why they dropped out of treatment, one caregiver explicitly reported that due to church involvement, the patient had been cured of the illness and treatment was no longer needed. While it is very likely that some families had reasons for leaving treatment prematurely that were completely unrelated to their religious beliefs, it is also possible that some families held beliefs they felt were not congruent with our treatment and simply did not share them with us.

In the current study, we had hypothesized that adaptive and maladaptive uses of religious coping would function differently in their associations with attrition. Specifically, we expected adaptive religious coping to be associated with lower rates and maladaptive religious coping with higher rates of attrition. However, study results indicated that overall religiosity (regardless of type of coping) was associated with an increased likelihood of attrition. Study results may suggest that regardless of whether their coping strategies are adaptive or not, religious individuals may already be receiving support, guidance, and other resources from their spiritual institutions which in turn, could impact their willingness to remain in treatment elsewhere.

#### *Patient Independence*

Although only observed in the subsample of PSY-ED families, study results supported our hypothesis that a lower independent self-construal in patients would be associated with lower attrition. Patients who perceive themselves as less independent, may be more aware of the areas with which they struggle and may feel that they have a lot to learn and gain from treatment providers, family members, and others. Thus, they may be more motivated to remain in therapy to learn how to better manage their illness and gain more independence. Conversely, patients who already view themselves as highly independent (endorsing statements such as, “Being able to take care of myself is a primary concern for me.”) may believe that they already have the skills needed to manage their illness and therefore, may be less invested in treatment, thus dropping out prematurely. It is unclear why this pattern was only found for patients in the PSY-ED treatment condition. One explanation is that CIT-S begins with the Family Collectivism module which is directly aimed at increasing family perceptions of interdependence. This

module may have decreased patients' perceptions of independence, thereby reducing our ability to see this association in patients in the CIT-S condition.

*Variables Previously Found to be Associated with Attrition*

In the current study, we examined and controlled for demographic variables found to be associated with attrition. Results demonstrated that higher levels of caregiver education and less severe patient psychiatric symptom severity were strong predictors of a decreased likelihood of attrition. Study results also offered some support for caregiver gender as a predictor of attrition such that families with female caregivers had a decreased likelihood of dropout. These results are consistent with prior research and further underscore the need to address why certain populations are more likely to drop out of treatment prematurely. Patients with greater symptom severity may have greater difficulty staying organized and keeping track of their schedule (e.g., what day/time therapy sessions are scheduled). In order to retain these patients and their family members in treatment, additional support or resources may need to be implemented (e.g., several reminder calls, using a portion of session time to create a weekly schedule). Similarly, the robust relationship between caregiver education and attrition may convey information about family members' day-to-day lives and how this might influence treatment-related decisions. Since education level and SES are closely tied, individuals with higher levels of education may have more financial freedom, resources, and flexibility in their schedule. On the other hand, individuals with lower levels of education may face unique challenges (e.g., working two or more jobs, long and inflexible work schedules, financial hardships, childcare and transportation issues) which must be addressed before these families can truly be invested and remain in treatment (Brown,

Feinberg, & Kan, 2012). Among families that provided a response in our content analysis, financial difficulties and work schedule conflicts were the most commonly reported reasons as to why families dropped out of treatment prematurely.

In addition, cultural and religious beliefs should continue to be explored in ethnic minority groups. Despite CIT-S being specifically designed to address a family's unique cultural and religious/spiritual beliefs, no CIT-S families with African-American caregivers completed the treatment. As such, it may be particularly important to explore cultural views and norms in African-American families in order to obtain a better understanding of the high dropout rates commonly observed.

#### *Implications and Future Directions*

While research strongly indicates that religion and spirituality offer mental health benefits to followers, religious individuals can still benefit tremendously from empirically-supported mental health interventions such as the ones offered in the current study. Thus, it seems that integration in which families can benefit from both types of services is warranted. Unfortunately, although the need for collaboration between religious and mental health care providers has been previously identified and emphatically called for, prior research suggests that collaboration remains minimal with the majority of clergy members providing mental health care services without referrals to or from mental health care professionals (Wood, Watson, & Hayter, 2011). Opening up the lines of communication and strengthening relationships between clergy and mental health services would be mutually beneficial. For many, the church and its religious leaders represent a trusted and important source of support and care. By making religious leaders aware of the mental health services available to their religious community and

assuring them of providers' acceptance of and willingness to incorporate religious and spiritual views into treatment, religious leaders may be more likely to endorse and recommend services to their congregants. If a treatment center or type of intervention has the approval of a trusted and credible religious leader, religious individuals may be more likely to seek out approved services and remain in treatment long enough to obtain benefit. Congregations could also be excellent platforms for dissemination of important mental health information as churches have regularly scheduled programs that draw large audiences comprised of diverse individuals of all ages (Asamoah, Osafo, & Agyapong, 2014). Collaboration would also benefit mental health care professionals by allowing them to better understand the mental health benefits of religion/spirituality and ways in which they can make adjustments to the care they provide in order to better serve their patients. As an example of successful collaboration between religious and mental health care providers, one of the largest mental health care providers in Sheffield, England (Sheffield Health and Social Care NHS Foundation Trust), works to incorporate spirituality in its mental health care treatments and provide mental health care services to a large proportion of the community. The Trust not only provides clergy members with critical mental health trainings and referral resources, but mental health care providers are also educated on the types of services and support that clergy members can provide (Wood et al., 2011).

Although religion/spirituality is covered at length in CIT-S, religious families in our study were more likely to drop out of both CIT-S and PSY-ED prematurely. Study results suggest that mental health care providers have a brief yet critical window to build rapport and convey acceptance of the family's belief system. In the CIT-S treatment

condition, religion and spirituality is covered at length in sessions 7 through 9. However, the majority of families who dropped out did so during the first few sessions with most leaving after just 1 session. Once again, it is quite likely that some families left for reasons completely unrelated to their religious beliefs. However, study results emphasize the importance of, from the onset of treatment, conveying an acceptance and willingness to discuss and explore religious beliefs and how these beliefs may be tied to understanding and treating mental illnesses.

Further, attempting to reduce the religiosity gap before families enter treatment may help begin the process of allowing families to feel more comfortable. The marketing and advertising of interventions and studies could be effective communication and educational tools. By using advertisements that convey that individuals from diverse cultural and/or religious backgrounds are welcome to participate and that their existing beliefs will be incorporated into treatment by skilled, culturally sensitive therapists, we may be able to change how families perceive treatment. Instead of assuming that there will be a cultural mismatch, families may approach with intrigue and excitement. Current culturally informed treatments must also communicate more effectively that religious beliefs and/or services and mental health care do not need to be mutually exclusive. In other words, individuals are not forced to choose between one or the other, and mental health interventions will not attempt to dissuade them from their existing beliefs. These ideas should be emphasized and repeated throughout the course of treatment until a strong therapeutic rapport can be built. Co-constructing an understanding of the illness may also make families feel more at ease and feel as if they are a part of a collaborative and valuable therapeutic relationship (Crosby & Bossley, 2012). Families should also be



provided with a “game plan” of what to expect during treatment so they can anticipate what topics will be covered and can even get excited for and look forward to knowing certain topics (e.g., religion/spirituality) will be discussed in just a few short weeks. However, knowing that most families drop out after the first few sessions, we may want to ensure that the most critical information is relayed in the first session so that even if families do leave treatment, they at least obtained valuable information. In the case of CIT-S, we may also want to experiment with modifying the order of how materials are presented. For example, by putting the religion/spirituality module earlier in the sequence, families may feel more comfortable discussing a familiar topic, may have the chance to build rapport with their therapist, may begin to see benefit in the intervention, and subsequently may be more willing to attend the remainder of sessions.

In the future, it will be important to determine if collaborations with religious institutions and leaders help to improve retention rates. Further, if religious leaders endorse specific treatments and inform their congregants of providers’ willingness to explore and integrate a family’s faith into treatment, this may further improve retention rates. However, training and continued education for mental health professionals on how to provide culturally sensitive treatments that effectively incorporate religious/spiritual beliefs will also be of the utmost importance. Additionally, families must be aware of providers’ willingness to include religious beliefs in mental health treatments without fear of censoring or being dissuaded from their faith. For culturally sensitive programs that include a religion/spirituality component such as the CIT-S intervention, modifications to marketing and advertising may be key to getting more families in the door and having them remain in treatment. Future studies may also want to explore if the

order or sequence of how materials or topics are presented impacts retention rates as well. To the best of our knowledge, the current study is the first of its kind to identify patient and caregiver sociocultural variables such as religious beliefs as predictors of attrition from family interventions for schizophrenia. Future studies should continue to explore these important variables and their relationships with treatment-related attitudes, beliefs, behaviors, and decisions to prematurely terminate treatment.

### *Limitations and Conclusions*

The current study had several strengths including use of an ethnically diverse sample of families, examination of variables previously identified as predictors of attrition, and examination of several sociocultural variables in both patients and primary caregivers. However, this study was not without limitations. First, we had a relatively small sample of families that participated in the study. Unfortunately, when families were divided into their treatment conditions and further categorized as either dropout or completer families, the numbers were even smaller. Our small sample size may have prevented us from identifying some significant relationships and carrying out additional statistical analyses. Second, this study relied on self-report measures in which some subscales had lower than desired reliabilities (e.g., Caregiver SCS Independence, Patient MARS Medication Adherence). Future studies may benefit from considering alternative self-report measures that examine the same constructs as well as supplementing with more impartial measures (e.g., independent observer ratings, blood serum drug levels, etc.). Finally, in the current study, we defined attrition as families who left treatment after randomization but before completion. As such, some families who completed their baseline assessment but did not attend one therapy session were included in this sample.

Many families did not provide us with a reason as to why they prematurely dropped out of treatment. Thus, it is possible that some families never had any intention of attending treatment and simply were interested in the compensation for their baseline assessment. Additionally, although families with religious individuals were found to be at an increased likelihood of attrition, it is possible that some religious families left treatment prematurely for reasons completely unrelated to their religious beliefs. It is also important to note that there may have been key differences in families who were willing to come in for treatment versus those who did not attend.

In conclusion, the current study is the first that we are aware of to examine sociocultural variables as potential predictors of attrition from family treatments for schizophrenia. Results emphasize the importance of continuing to examine previously identified predictors of attrition but also that examining sociocultural variables such as religiosity can help to further elucidate patterns of high attrition rates. Study results suggest that collaboration between religious institutions and mental health care providers may positively impact retention rates. However, mental health care professionals must make it clear that they are willing to incorporate their client's existing religious beliefs into treatment and that faith and mental health care do not have to be mutually exclusive entities.

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## Appendix

### *Measures*

#### Family Environment Scale (FES)

The following are statements about families. Circle T if the statement is true or mostly true for most members of your family. Circle F if the statement is false or mostly false for most members. Answer questions based on the LAST 3 MONTHS or SINCE YOUR LAST ASSESSMENT. Answer questions based on family members participating in study with you.

#### *Family Cohesion Subscale (labeled only for the current study)*

- 1) T F Family members really help and support one another.
- 2) T F There is a feeling of unity and cohesion in our family.
- 3) T F We often seem to be killing time at home.
- 4) T F We put a lot of energy into what we do at home.
- 5) T F We rarely volunteer when something has to be done at home.
- 6) T F Family members really back each other up.
- 7) T F There is very little group spirit in our family.
- 8) T F We really get along well with each other.
- 9) T F There is plenty of time and attention for everyone in our family.

#### *Religious/Moral Emphasis Subscale (labeled only for the current study)*

- 10) T F We don't say prayers in our family.
- 11) T F We believe there are some things you just have to take on faith.
- 12) T F Family members attend church, synagogue, or Sunday School fairly often.
- 13) T F We often talk about the religious meaning of Christmas, Passover, or other holidays
- 14) T F We don't believe in heaven or hell.
- 15) T F Family members have strict ideas about what is right and wrong
- 16) T F In our family each person has different values or standards of right and wrong.

- 17) T F The Bible or other religious text is a very important book in our home.
- 18) T F Family members believe that if you sin you will be punished.

### Singlelis Self-Construal Scale (SCS)

Directions: Read each statement carefully and circle one number per question indicating the extent to which you agree or disagree with the statement. Do not circle the words. Answer questions based on the last 3 months or since your last assessment.

1. If my brother or sister fails, I feel responsible

strongly disagree    1       2       3       4       5       6       7       strongly agree

2. I prefer to be direct and forthright when dealing with people I've just met.

strongly disagree    1       2       3       4       5       6       7       strongly agree

3. I have respect for the authority figures with whom I interact.

strongly disagree    1       2       3       4       5       6       7       strongly agree

4. It is important for me to maintain harmony within my group.

strongly disagree    1       2       3       4       5       6       7       strongly agree

5. I value being in good health above everything.

strongly disagree    1       2       3       4       5       6       7       strongly agree

6. Even when I strongly disagree with group members, I avoid an argument

strongly disagree    1       2       3       4       5       6       7       strongly agree

7. I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am.

strongly disagree    1       2       3       4       5       6       7       strongly agree

8. I enjoy being unique and different from others in many respects.

strongly disagree    1       2       3       4       5       6       7       strongly agree

9. I respect people who are modest about themselves.

strongly disagree    1       2       3       4       5       6       7       strongly agree



10. I should take into consideration my parents' advice when making education/career plans.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
11. Being able to take care of myself is a primary concern for me.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
12. My personal identity independent of others is very important to me.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
13. I act the same way no matter who I am with.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
14. It is important to me to respect decisions made by the group.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
15. I often have the feeling that my relationships with others are more important than my own accomplishments.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
16. My happiness depends on the happiness of those around me.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
17. I will stay in a group if they need me, even when I am not happy with the group.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
18. I'd rather say "No" directly, than risk being misunderstood.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
19. I will sacrifice my self-interest for the benefit of the group I am in.
- strongly disagree    1    2    3    4    5    6    7    strongly agree
20. I would offer my seat in a bus to my professor.
- strongly disagree    1    2    3    4    5    6    7    strongly agree

21. I am comfortable with being singled out for praise and reward.

strongly disagree    1       2       3       4       5       6       7       strongly agree

22. Having a lively imagination is important to me.

strongly disagree    1       2       3       4       5       6       7       strongly agree

23. I am the same person at home that I am at school.

strongly disagree    1       2       3       4       5       6       7       strongly agree

24. Speaking up during a class is not a problem for me.

strongly disagree    1       2       3       4       5       6       7       strongly agree

### Religious Coping Activities Scale (RCAS)

Please read the statements listed below and for each statement please indicate to what extent each of the following was involved in your coping with having/having a relative with schizophrenia. Answer questions based on the LAST 3 MONTHS or SINCE YOUR LAST ASSESSMENT. Please use the following scale to record your answers.

1 = not at all  
 2 = somewhat  
 3 = quite a bit  
 4 = a great deal

1. Trusted that God would not let anything terrible happen to me.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

2. Experienced God's love and care.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

3. Realized that God was trying to strengthen me.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

4. In dealing with the problem, I was guided by God.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

5. Realized that I didn't have to suffer since Jesus suffered for me.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

6. Used Christ or other religious figure as an example of how I should live.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

7. Took control over what I could and gave the rest to God.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

8. My faith showed me different ways to handle the problem.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

9. Accepted the situation was not in my hands but in the hands of God.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

10. Found the lesson from God in the event.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

11. God showed me how to deal with the situation.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

12. Used my faith to help me decide how to cope with the situation.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

13. Tried to be less sinful.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

14. Confessed my sins.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

15. Led a more loving life.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

16. Attended religious services or participated in religious rituals.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

17. Participated in religious groups (support groups, prayer groups, Bible studies.)

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

18. Provided help to other members of my religious community.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

19. Felt angry with or distant from God.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

20. Felt angry with or distant from the members of the religious community.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

21. Questioned my religious beliefs and faith.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

22. Received support from the clergy (for example, pastors, priests, rabbis, etc.).

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

23. Received support from other members of the religious community.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

24. Asked for a miracle.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

25. Bargained with God to make things better.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

26. Asked God why it happened.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

27. Focused on the world-to-come rather than the problems of this world.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

28. I let God solve my problems for me.

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

29. Prayed or read the Bible or other religious text to keep my mind off my problems

1 = not at all    2 = somewhat    3 = quite a bit    4 = a great deal

### Medication Adherence Scale (MARS)

Please respond to the following statements by circling the answer which best describes your/your relative's behavior or the attitude you/your relative has held toward your/his/her medication in the past three months or since you last assessment. **Family members should respond based on their perception of the patient's behaviors and attitudes.**

- |   |     |    |
|---|-----|----|
| 1. Do you ever forget to take your medication?                                    | YES | NO |
| 2. Are you careless at times about taking your medicine?                          | YES | NO |
| 3. When you feel better, do you sometimes stop taking your medicine?              | YES | NO |
| 4. Sometimes if you feel worse when you take the medicine, do you stop taking it? | YES | NO |
| 5. I take my medication only when I am sick                                       | YES | NO |
| 6. It is unnatural for my mind and body to be controlled by medication.           | YES | NO |
| 7. My thoughts are clearer on medication.   | YES | NO |
| 8. By staying on medication, I can prevent getting sick.                          | YES | NO |
| 9. I feel weird, like a 'zombie', on medication.                                  | YES | NO |
| 10. Medication makes me feel tired and sluggish.                                  | YES | NO |

### Drug Abuse Screening Test (DAST)

These questions refer to the last 3 month or since your last assessment. If you do not use drugs, still answer all questions

Circle your response

1. Have you used drugs other than those required for medical reasons?..... Yes/No
2. Have you abused prescription drugs?..... Yes/No
3. Do you abuse more than one drug at a time?..... Yes/No
4. Can you get through the week without using drugs?..... Yes/No
5. Are you always able to stop using drugs when you want to?..... Yes/No
6. Have you had “blackouts” or “flashbacks” as a result of drug use?..... Yes/No
7. Do you ever feel bad or guilty about your drug use?..... Yes/No
8. Does your spouse (or parents) ever complain about your involvement with drugs?  
Yes/No
9. Has drug abuse created problems between you and your spouse or your parents?  
Yes/No
10. Have you lost friends because of your use of drugs?..... Yes/No
11. Have you neglected your family because of your use of drugs?..... Yes/No
12. Have you been in trouble at work because of drug abuse?..... Yes/No
13. Have you lost a job because of drug abuse?..... Yes/No
14. Have you gotten into fights when under the influence of drugs?..... Yes/No
15. Have you engaged in illegal activities in our to obtain drugs?..... Yes/No
16. Have you been arrested of possession of illegal drugs?..... Yes/No
17. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?..... Yes/No
18. Have you had medical problems as a result of your drug use  
(e.g., memory loss, hepatitis, convulsions, bleeding, etc.)?..... Yes/No
19. Have you gone to anyone for help for a drug problem?..... Yes/No
20. Have you been involved in a treatment program specifically related to drug abuse?..... Yes/No

## Brief Psychiatric Rating Scale (BPRS), Version 4.0

### **Description and Administration of the BPRS**

The Brief Psychiatric Rating Scale (BPRS) provides a highly efficient, rapid evaluation procedure for assessing symptom change in psychiatric patients. It yields a comprehensive description of major symptom characteristics. Factor analyses of the original 18-item BPRS typically yields four or five factor solutions. The Clinical Research Center's Diagnosis and Psychopathology Unit has developed a 24-item version of the BPRS.

This manual contains interview questions, symptom definitions, specific anchor points for rating symptoms, and a "how-to" section for problems that arise in rating psychopathology. The purpose of the manual is to assist clinicians and researchers to sensitively elicit psychiatric symptoms and to reliably rate the severity of symptoms. The expanded BPRS includes six new scales added to the original BPRS (Overall & Gorham, 1962) for the purpose of a more comprehensive assessment of a wider range of individuals with serious mental disorders, especially outpatients living in the community (Lukoff, Nuechterlein, & Ventura, 1986).

This manual will enable the clinician or researcher to conduct a high quality interview adequate to the task of eliciting and rating the severity of symptoms in individuals who are often inarticulate or who deny their illness. The following guidelines are provided to standardize assessment. Please familiarize yourself with these methods for assessing psychopathology.

- (1) Using all sources of information on symptoms.
- (2) Selecting an appropriate period or interval for rating symptoms.
- (3) Integrating frequency and severity in symptom rating: the hierarchical criterion.
- (4) Rating the severity of past delusions for which the patient lacks insight.
- (5) Rating symptoms when the patient denies them.
- (6) Using a standardized reference group in making ratings.
- (7) Rating symptoms that overlap two or more categories or scales on the BPRS.
- (8) Rating a symptom that has no specified anchor point congruent with its severity level.
- (9) "Blending" ratings made in different evaluation situations.
- (10) Resolving apparently contradictory symptoms.

#### **1. USING ALL SOURCES OF INFORMATION ON SYMPTOMS**

The rating of psychopathology should be made on the basis of all available sources of information about the patient. These sources include behavioral observations and interviews made by treatment staff, family members, or other caregivers in contact with the patient, available medical and psychiatric case records, and the present interview of the patient. The interviewer/rater is encouraged to seek additional sources of information about the patient's psychopathology from others to supplement the present interview—this is particularly important when the patient denies symptoms.



## 2. SELECTING AN APPROPRIATE PERIOD OR INTERVAL FOR RATING SYMPTOMS

The duration of the time frame for assessment depends upon the purpose for the rating. For example, if the rater is interested in determining the degree of change in psychopathology during a one month period between pharmacotherapy visits, the rating period should be one month. If a research protocol aims to evaluate the emergence of prodromal symptoms or exacerbation of psychotic symptoms, it may be advisable to select a one week interval since longer periods may lose accuracy in retrospective recall. When a study demands completeness in identifying criteria for relapse or exacerbation during a one or two year period, frequent BPRS assessments will be necessary.

Rating periods typically range from one day to one month. Retrospective reporting by patients beyond one month may suffer from response bias, retrospective distortions, and memory problems (which are common in persons with psychotic and affective disorders). When resources and personnel do not permit frequent assessments, important information can still be captured if the frequency of assessments can be temporarily increased when (1) prodromal symptoms or stress are reported; (2) medication titration and dosing questions are paramount; and (3) before and after major changes in treatment programs.

## 3. INTEGRATING FREQUENCY AND SEVERITY IN SYMPTOM RATING: THE HIERARCHICAL CRITERION

Most of the BPRS scales are scored in terms of the frequency and/or severity of the symptom. It is sometimes the case that the frequency and severity do not match. A hierarchical principle should be followed that requires the rater to select the highest scale level that applies to either frequency or severity. Thus, when the anchor point definitions contain an "OR," the patient should be assigned the highest rating that applies. For example, if a patient has hallucinations persistently throughout the day (a rating of "7"), but the hallucinations only interfere with the patient's functioning to a limited extent (a rating of "5"), the rater should score this scale "7".

The BPRS is suited to making frequent assessments of psychopathology covering short periods of time. If, however, an interviewer intends to cover a relatively long period of time (e.g., 6 weeks), then combining ratings for severity and frequency of symptoms must be carefully thought out depending upon the specific goals. If the goal of a project is to define periods of relapse or exacerbation, the rating should reflect the period of peak symptomatology. For example, if over a six week period the patient experienced a week of persistent hallucinations, but was free of hallucinations the remaining time, the patient should be rated a "6" on hallucinations, reflecting the "worst" period of symptomatology. Alternatively, if the goal is to obtain a general level of symptomatology, the rating should reflect a "blended" or average score. For extended rating periods (e.g., 3 months), the interviewer may prefer to make one rating reflecting the worst period of severity/frequency/functioning and another rating reflecting the "average" amount of psychopathology for the entire period.

## 4. RATING THE SEVERITY OF PAST DELUSIONS FOR WHICH THE SUBJECT LACKS INSIGHT

Patients may often indicate varying degrees of insight or conviction regarding past symptoms, making their symptoms difficult to rate. Experiences that result from psychotic episodes can often appear quite real to patients. For example, the belief that others were trying to poison you, or controlled all your thoughts and forced you to walk into traffic, could have created severe anxiety and intense fear. Patients can give vivid accounts of their psychotic experiences that are as real as if the situations actually occurred. It is important in these cases to rate the extent to which these memories of a delusional experience can be separated from current delusions involving the present.

Please note that a patient may be able to describe his or her past or current delusions as part of an illness or even refer to them as “delusions.” However, a patient should always be rated as having delusions if he or she has *acted* on the delusional belief during the rating period.

When a patient describes a delusional belief once firmly held, but that is now seen as irrational, then a “1” should be scored for Unusual Thought Content (and also for Grandiosity, Somatic Concern, Guilt, or Suspiciousness if the idea feel into one of these thematic categories). However, if the individual still believes that the past psychotic experience or event was real, despite not currently harboring the concern, it should be rated a “2” or higher depending on the degree of reality distortion associated with the belief.

Consider the following scenarios:

Scenario No. 1: The patient gives an account of delusional and/or hallucinatory experience and realizes in retrospect that he was ill. He indicates that he has a chemical imbalance in his brain, or that he has a mental condition.

- Rate “1” on Unusual Thought Content.

Scenario No. 2: The patient gives indications that his past psychotic experiences were due to a chemical imbalance and/or an illness, but entertains some degree of doubt. He claims it is possible that people were trying to kill him, but he is doubtful. The memories of what happened are not bizarre and he indicates that currently he is certain no one is trying to hurt him.

- Rate “2” or “3” on Unusual Thought Content depending on degree of reality retained.

Scenario No. 3: The patient describes previous psychotic experiences as if they actually occurred. He can give examples of what occurred, e.g., co-workers put drugs in his coffee, or that machines read his thoughts. However, the patient says those circumstances no longer occur. The patient is not currently concerned about co-workers or machines, but he is convinced that the circumstances on which the delusion are based actually occurred in the past.

- Rate “3” or “4” on Unusual Thought Content depending on the degree of reality distortion, and a “1” on Suspiciousness.

Scenario No. 4: The patient holds bizarre beliefs regarding the circumstances that occurred in the past and/or his current behavior in influenced by delusional beliefs. For example, the patient believes that thoughts were at one time beamed into his mind from aliens OR the patient will not watch T.V. for fear that the messages will again be directed to him OR that the mafia is located in shopping malls that he should avoid.

- Rate “4” or higher on Unusual Thought Content depending on the degree of preoccupation and impairment associated with the belief. Consider rating suspiciousness.

Scenario No. 5: The patient believes that previous psychotic experiences were real and previous delusional beliefs are currently influencing most aspects of daily life causing preoccupation and impairment.

- Rate “6” or “7” on Unusual Thought Content depending on the degree of preoccupation and impairment associated with the belief.

## 5. RATING SYMPTOMS WHEN THE PATIENT DENIES THEM

An all too common phenomenon in clinical practice or research is the denial or minimization of symptoms by patients. Patients deny, hide, dissemble or minimize their symptoms for a variety of reasons, including fear of being committed or restricted to a hospital or having medication increased. Simply recording a patient’s negative response to BPRS symptom items, if denial or distortion is present, will result in invalid and unreliable data. When an interviewer suspects that a patient may be denying symptoms, it is absolutely essential that other sources of information be solicited and utilized in the ratings.

Several situations might suggest that patient is not entirely forthcoming in reporting his/her symptom experiences. Patients may deny hearing voices, yet be observed whispering under their breath as if in response to a voice. The phrasing that a patient uses in response to a direct question about a delusion or hallucination can alert the interviewer to the potential denial of symptoms. For example, if a patient responds to an inquiry as saying “No.” Subtleties in patient responses communicate a great deal and must be followed-up before the interviewer concludes that the symptom is absent.

There are several ways for the interviewer to obtain more reliable information from a patient who may be denying or minimizing symptoms. In all these approaches, interviewing skills, interpersonal rapport, and sensitivity to the patient are of paramount importance. If the patient is experiencing difficulty disclosing information about psychotic symptoms, the interviewer can shift to inquire about less threatening material such as anxiety/depression or neutral topics. The interviewer should then return to sensitive topics after the patient feels more comfortable and concerns about disclosure have been addressed.

The use of empathy is critical in helping a patient express difficult and possibly embarrassing experiences. An interviewer may say, “I understand that recalling what happened may be unpleasant, but I am very interested in exactly what you experienced.” It is advisable to let patients know what you may be sensing clinically; “I have the impression that you are reluctant to tell me more about what happened. Could that be because you are concerned about what I might think or write down about you?” The interviewer should actively engage the patient in discussing any apparent reasons for denying symptoms. The interviewer can discuss openly in an inviting and noncritical fashion any discrepancies noted between the patient’s self-report of symptoms and observations of speech and behavior. For example, “You have said that you are not depressed, yet you seem very sad and you have been moving very slowly.” When denial occurs, the BPRS interview becomes a dynamic interplay between the interviewer’s

desire for accurate symptom information and determining the reasons underlying the patient's reluctance to disclose.

Occasionally, at the time of the interview, the interviewer will have information about the symptoms that the patient is denying. It is permissible to use a mild confrontation technique in an attempt to encourage a patient to disclose accurate symptom information. For example, a BPRS interviewer may learn from the patient's therapist or relatives of the presence of auditory hallucinations. The interviewer may state, "I understand from talking with your therapist (or relative) that you have been hearing voices. Could you tell me about that?" Letting the patient know in a sensitive and gentle manner that information about his symptoms are already known may aid willingness to disclose. This approach is most effective when a policy of sharing patient information in a treatment team situation is explained to all entering patients. It may be necessary to inform the patient that not all clinical material is shared, but that symptom information needed to manage treatment can not in all cases be confidential.

When you cannot resolve conflicts or contradictions between patient's self-report and the report of others, you must use your clinical judgment regarding the most reliable informants. Be sure to make notes on the BPRS rating sheet regarding any conflicting sources of information and specify how the final decision was made.

#### 6. USING A STANDARDIZED REFERENCE GROUP IN MAKING RATINGS

The proper reference group for conducting assessments is a group of normal individuals who are not psychiatric patients that are living and working in the community free of symptoms. BPRS interviewers should have in mind a group of individuals who are able to function either at work/school, socially, or as a homemaker, at levels appropriate to the patient's age and socioeconomic status. Research has shown that normal controls score at "2" or below on most psychotic items of the BPRS. BPRS interviewers should not use other patients previously interviewed, especially those with severe symptoms, as the reference standard, since this will systematically bias ratings toward lower scores.

#### 7. RATING SYMPTOMS THAT OVERLAP TWO OR MORE CATEGORIES OR SCALES ON THE BPRS

Systematized or multiple delusions can be rated on more than one symptom item or scale on the BPRS, depending on the theme of the delusional belief. For example, if a patient has a delusion that certain body parts have been surgically removed against his/her will and replaced with broken mechanical parts, he or she would be rated at the level of "6" or "7" on both Somatic Concern and at the level of "4" to "7" on Unusual Thought Content depending on the frequency and preoccupation with the delusion. Furthermore, if the patient felt guilty because he believed the metal in his body interfered with radio transmissions between air traffic controllers and pilots resulting in several plane crashes, the BPRS item Guilt should also be rated.

The specific ratings for each of the overlapping symptom dimensions may differ depending on the anchor points of the BPRS item(s). Thus, a patient with a clear-cut persecutory delusion involving the neighbors should be rated a "6" on Suspiciousness. Whereas, the same delusion could be rated a "4" on Unusual Thought Content if it is encapsulated and not associated with impairment.

## 8. RATING A SYMPTOM THAT HAS NO SPECIFIC ANCHOR POINT CONGRUENT WITH ITS SEVERITY LEVEL

The anchor points for a given BPRS item are critical in achieving good reliability across raters and across research settings. However, there are occasions when a particular symptom may not fit any of the anchor point definitions. Anchor point definitions could not be written to cover all possible symptoms exhibited by patients. In general, ratings of “2” or “3” represent nonpathological but observable mild symptomatology; “4” or “5” represents clinically significant moderate symptomatology; and “6” or “7” represents clinically significant and severe symptomatology.

The anchor points in this manual are guidelines to aid in the process of defining the character, frequency, and impairment associated with various types of psychiatric symptoms. When faced with a complicated rating, the interviewer may find it useful to first classify the symptom as mild (“2” or “3”), moderate (“4” or “5”), or severe (“6” or “7”), and second to consult the anchor point definitions to pinpoint the rating.

BPRS symptoms that are classified in the severe range usually represent pathological phenomena. However, it is possible for a patient to report or be observed to exhibit examples of mild psychopathology that should be rated at much higher levels. For example, on the item Tension, if hand wringing is observed on 2-3 occasions, the interviewer would rate a “2” or “3.” However, if the patient is observed to be hand wringing constantly, then consider a higher rating such as a “5” or “6” on Tension. Similarly, instances of severe psychopathology that are brief, transient, and non-impairing in nature should be rated in the mild range.

## 9. “BLENDING” RATINGS MADE IN DIFFERENT EVALUATION SITUATIONS

A psychiatric patient can exhibit different levels of the same symptom depending on the setting in which the patient is observed or the time period involved. Consider the patient who is talkative during a rating session with the BPRS interviewer, but is very withdrawn and blunted with other patients. In the interview session the patient may rate a “3” on blunted affect and “2” on emotional withdrawal, but rate “5” on those symptoms when interacting with other patients. The interviewer can consider integrating the two sources of information and make an averaged or “blended” rating.

## 10. RESOLVING APPARENTLY CONTRADICTORY SYMPTOMS

It is possible to rate two or more symptoms on the BPRS that represent seemingly contradictory dimensions of phenomenology. For example, a patient can exhibit blunted affect and elevated mood in the same interview period. A patient may laugh and joke with the interviewer, but then shift to a blunted, slowed, and emotionally withdrawn state during the same interview. In this case, rating the presence of both elevated mood and negative symptoms may be appropriate reflecting that both mood states were present. Although the simultaneous presence of apparently contradictory symptoms are rare, if such combinations do appear, the rater should consider rating each symptom lower than if just one had appeared. This conservative approach to rating reflects a cautious orientation to the rating process when there is ambiguity regarding the symptomatology being assessed.

## CLINICAL APPLICATIONS OF THE BPRS: GRAPHING SYMPTOMS

A graph is printed at the end of this administration manual to help raters plot and monitor symptoms from the BPRS. Because psychotic and other symptoms often fluctuate over time, graphing them enables the clinician to identify exacerbations, periods of remission, and prodromal periods that precede a relapse. Monitoring and graphing can be the key to early intervention to reduce morbidity, relapses, and rehospitalizations.

Graphing of symptomatology can provide vivid representations of the relationships between specific types of symptoms (e.g., hallucinations) and other variables of interest, such as (1) medication type and dose, (2) changes in psychosocial treatment and rehabilitation programs, (3) the use of "street" drugs or alcohol, (4) life events, and (5) other environmental and familial stressors. The preprinted graph shown at the end of this manual provides space to write specific life events or treatment changes and permits the "eyeballing" of the influence of these variables on symptoms. Repeated measurement and graphing of symptoms over time can be done for individual items (e.g., anxiety or hallucinations), or for clusters of symptoms (e.g., psychotic index). Such clusters can be chosen from factor analyses of earlier versions of the BPRS (Guy, 1976; Overall, Hollister, and Pichot, 1967; Overall and Porterfield, 1963). The blank graph of this manual allows raters to select and write in specific symptoms of the BPRS based on the needs of individual patients.

## REFERENCES

- Guy W: *ECDEU Assessment Manual for Psychopharmacology*. DHEW Pub. No. (ADM) 76-338. Rockville, MD: National Institute of Mental Health, 1976.
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- Overall JE, Hollister LE, Pichot P: Major psychiatric disorders: A four-dimensional model. *Archives of General Psychiatry*, 16: 146-151, 1967.
- Overall JE and Porterfield, JL. Powered vector method of factor analysis. *Psychometrika* 28: 415-422, 1963.

## SCALE ITEMS AND ANCHOR POINTS

Rate items 1-14 on the basis of patient's self-report. Note items 7, 12, and 13 are also rated on the basis of observed behavior. Items 15-24 are rated on the basis of observed behavior and speech.

1. **SOMATIC CONCERN:** Degree of concern over present bodily health. Rate the degree to which physical health is perceived as a problem by the patient, whether complaints have realistic bases or not. Somatic delusions should be rated in the

sever range with or without somatic concern. Note: Be sure to assess the degree of impairment due to somatic concerns only and not other symptoms, e.g., depression. In addition, if the subject rates a “6” or “7” due to somatic delusions, then you must rate Unusual Thought Content at least a “4” or above.

*Have you been concerned about your physical health? Have you had any physical illness or seen a medical doctor lately? (What does your doctor say is wrong? How serious is it?)*

*Has anything changed regarding your appearance?*

*Has it interfered with your ability to perform your usual activities and/or work?*

*Did you ever feel that parts of your body had changed or stopped working?*

[If patient reports any somatic concerns/delusions, ask the following]:

*How often are you concerned about [use patient's description]?*

*Have you expressed any of these concerns with others?*

- 2      Very Mild  
Occasional concerns that tend to be kept to self.
- 3      Mild  
Occasional concerns that tend to be voiced to others (e.g., family, physician).
- 4      Moderate  
Frequent expressions of concern or exaggerations of existing ills or some preoccupation, but no impairment in functioning. Not delusional.
- 5      Moderately Severe  
Frequent expressions of concern or exaggeration of existing ills or some preoccupation and moderate impairment of functioning. Not delusional.
- 6      Severe  
Preoccupation with somatic complaints with much impairment in functioning OR somatic delusions without acting on them or disclosing to others.
- 7      Extremely Severe  
Preoccupation with somatic complaints with severe impairment in functioning OR somatic delusions that tend to be acted on or disclosed to others.

2. ANXIETY: Reported apprehension, tension, fear, panic or worry. Rate only the patient's statements, not observed anxiety which is rated under TENSION.

*Have you been worried a lot during [mention time frame]? Have you been nervous or apprehensive?*

*(What do you worry about?)*

*Are you concerned about anything? How about finances or the future?  
When you are feeling nervous, do your palms sweat or does your heart beat fast  
(or shortness of breath, trembling, choking)?*

[If patient reports anxiety or autonomic accompaniment, ask the following]:

*How much of the time have you been [use patient's description]?*

*Has it interfered with your ability to perform your usual activities/work?*

- 2      Very Mild  
Reports some discomfort due to worry OR infrequent worries that occur more than usual for most normal individuals.
- 3      Mild  
Worried frequently but can readily turn attention to others things.
- 4      Moderate  
Worried most of the time and cannot turn attention to others things easily but no impairment in functioning OR occasional anxiety with autonomic accompaniment but no impairment in functioning.
- 5      Moderately Severe  
Frequent, but not daily, periods of anxiety with autonomic accompaniment OR some areas of functioning are disrupted by anxiety or worry.
- 6      Severe  
Anxiety with autonomic accompaniment daily but not persisting throughout the day OR many areas of functioning are disrupted by anxiety or constant worry.
- 7      Extremely Severe  
Anxiety with autonomic accompaniment persisting throughout the day OR most areas of functioning are disrupted by anxiety or constant worry.

3.      DEPRESSION: Include sadness, unhappiness, anhedonia, and preoccupation with depressing topics (can't attend to TV or conversations due to depression), hopelessness, loss of self-esteem (dissatisfied or disgusted with self or feeling of worthlessness). Do not include vegetative symptoms, e.g., motor retardation, early waking, or the amotivation that accompanies the deficit syndrome.

*How has your mood been recently? Have you felt depressed (sad, down, unhappy, as if you didn't care)?*

*Are you able to switch your attention to more pleasant topics when you want to?*

*Do you find that you have lost interest in or get less pleasure from things you used to enjoy, like family, friends, hobbies, watching T.V., eating?*

[If subject reports feelings of depression, ask the following]:



*How long do these feelings last?*

*Has it interfered with your ability to perform your usual activities/work?*

- 2      Very Mild  
Occasionally feels sad, unhappy or depressed.
- 3      Mild  
Frequently feels sad or unhappy but can readily turn attention to other things.
- 4      Moderate  
Frequent periods of feeling very sad, unhappy, moderately depressed, but able to function with extra effort.
- 5      Moderately Severe  
Frequent, but not daily, periods of deep depression OR some areas of functioning are disrupted by depression.
- 6      Severe  
Deeply depressed daily but not persisting throughout the day OR many areas of functioning are disrupted by depression.
- 7      Extremely Severe  
Deeply depressed daily OR most areas of functioning are disrupted by depression.

4. SUICIDALTY: Expressed desire, intent or actions to harm or kill self.

*Have you felt that life wasn't worth living? Have you thought about harming or killing yourself? Have you felt tired of living or as though you would be better off dead? Have you ever felt like ending it all?*

[If patient reports suicidal ideation, ask the following]:

*How often have you thought about [use patient's description]?*

*Did you (Do you) have a specific plan?*

- 2      Very Mild  
Occasional feelings of being tired of living. No overt suicidal thoughts.
- 3      Mild  
Occasional suicidal thoughts without intent or specific plan OR he/she feels they would be better off dead.
- 4      Moderate  
Suicidal thoughts frequent without intent or plan.
- 5      Moderately Severe

Many fantasies of suicide by various methods. May seriously consider making an attempt using non-lethal methods or in full view of potential saviors.

- 6 Severe  
Clearly wants to kill self. Searches for appropriate means and time, OR potentially serious suicide attempt with patient knowledge of possible rescue.
- 7 Extremely Severe  
Specific suicidal plan and intent (e.g., “as soon as \_\_\_\_\_, I will do it by doing X”), OR suicide attempt characterized by plan patient thought was lethal or attempt in secluded environment.
5. GUILT: Overconcern or remorse for past behavior. Rate only patient’s statements, do not infer guilt feelings from depression, anxiety, or neurotic defenses. Note: If the subject rates a “6” or “7” due to delusions of guilt, then you must rate Unusual Thought Content as least a “4” or above depending on level of preoccupation and impairment.

*Is there anything you feel guilty about? Have you been thinking about past problems? Do you tend to blame yourself for things that have happened? Have you done anything you’re still ashamed of?*

[If patient reports guilt/remorse/delusions, ask the following]:  
*How often have you been thinking about [use patient’s description]?  
Have you disclosed your feelings of guilt to others?*

- 2 Very Mild  
Concerned about having failed someone or at something but not preoccupied. Can shift thoughts to other matters easily.
- 3 Mild  
Concerned about having failed someone or at something with some preoccupation. Tends to voice guilt to others.
- 4 Moderate  
Disproportionate preoccupation with guilt, having done wrong, injured others by doing or failing to do something, but can readily turn attention to other things.
- 5 Moderately Severe  
Preoccupation with guilt, having failed someone or at something, can turn attention to other things, but only with great effort. Not delusional.
- 6 Severe

Delusional guilt OR unreasonable self-reproach grossly out of proportion to circumstances. Subject is very preoccupied with guilt and is likely to disclose to others or act on delusions.

6. HOSTILITY: Animosity, contempt, belligerence, threats, arguments, tantrums, property destruction fights and any other expression of hostile attitudes or actions. Do not infer hostility from neurotic defenses, anxiety or somatic complaints. Do not include incident of appropriate anger or obvious self-defense.

*How have you been getting along with people (family, co-workers, etc.)?  
Have you been irritable or grumpy lately? (How do you show it? Do you keep it to yourself?)*

*Were you ever so irritable that you would shout at people or start fights or arguments? (Have you found yourself yelling at people you didn't know?)  
Have you hit anyone recently?*

- 2      Very Mild  
Irritable or grumpy, but not overtly expressed.
- 3      Mild  
Argumentative or sarcastic.
- 4      Moderate  
Overtly angry on several occasions OR yelled at others excessively.
- 5      Moderate Severe  
Has threatened, slammed about or thrown things.
- 6      Severe  
Has assaulted others but with no harm likely, e.g., slapped or pushed, OR destroyed property, e.g., knocked over furniture, broken windows.
- 7      Extremely Severe  
Has attacked others with definite possibility of harming them or with actual harm, e.g., assault with hammer or weapon.

7. ELEVATED MOOD: A pervasive, sustained and exaggerated feeling of well-being, cheerfulness, euphoria (implying a pathological mood), optimism that is out of proportion to the circumstances. Do not infer elation from increased activity or from grandiose statements alone.

*Have you felt so good or high that other people thought that you were not your normal self? Have you been feeling cheerful and "on top of the world" without any reason?*

[If patient reports elevated mood/euphoria, ask the following]:

*Did it seem like more than just feeling good?  
How long did that last?*

- 2      Very Mild  
Seems to be very happy, cheerful without much reason.
  - 3      Mild  
Some unaccountable feelings of well-being that persist.
  - 4      Moderate  
Reports excessive or unrealistic feelings of well-being, cheerfulness, confidence or optimism inappropriate to circumstances, some of the time. May frequently joke, smile, be giddy or overly enthusiastic OR few instances of marked elevated mood with euphoria.
  - 5      Moderately Severe  
Reports excessive or unrealistic feelings of well-being, confidence or optimism inappropriate to circumstances much of the time. May describe feeling “on top of the world,” “like everything is falling into place,” or “better than ever before,” OR several instances of marked elevated mood with euphoria.
  - 6      Severe  
Reports many instances of marked elevated mood with euphoria OR mood definitely elevated almost constantly throughout interview and inappropriate to content.
  - 7      Extremely Severe  
Patient reports being elated or appears almost intoxicated, laughing, joking, giggling, constantly euphoric, feeling invulnerable, all inappropriate to immediate circumstances.
8.      GRANDIOSITY: Exaggerated self-opinion, self-enhancing conviction of special abilities or powers or identity as someone rich or famous. Rate only patient’s statements about himself, not his demeanor. Note: If the subject rates a “6” or “7” due to grandiose delusions, you must rate Unusual Thought Content at least a “4” or above.

*Is there anything special about you? Do you have any special abilities or powers? Have you thought that you might be somebody rich or famous?*

[If patient reports any grandiose ideas/delusions, ask the following]:  
*How often have you been thinking about [use patient’s description]? Have you told anyone about what you have been thinking? Have you acted on any of these ideas?*

- 2      Very Mild  
Feels great and denies obvious problems, but not unrealistic.
- 3      Mild  
Exaggerated self-opinion beyond abilities and training.
- 4      Moderate  
Inappropriate boastfulness, claims to be brilliant, insightful, or gifted beyond realistic proportions, but rarely self-discloses or acts on these inflated self-concepts. Does not claim that grandiose accomplishments have actually occurred.
- 5      Moderately Severe  
Same as 4 but often self-discloses and acts on these grandiose ideas. May have doubts about the reality of the grandiose ideas. Not delusional.
- 6      Severe  
Delusional—claims to have special powers like ESP, to have millions of dollars, invented new machines, worked at jobs when it is known that he was never employed in these capacities, be Jesus Christ, or the President. Patient may not be very preoccupied.
- 7      Extremely Severe  
Delusional—same as 6 but subject seems very preoccupied and tends to disclose or act on grandiose delusions.
9.      SUSPICIOUSNESS: Expressed or apparent belief that other persons have acted maliciously or with discriminatory intent. Include persecution by supernatural or other nonhuman agencies (e.g., the devil). Note: Ratings of “3” or above should also be rated under Unusual Thought Content.

*Do you ever feel uncomfortable in public? Does it seem as though others are watching you? Are you concerned about anyone’s intentions toward you? Is anyone going out of their way to give you a hard time, or trying to hurt you? Do you feel in any danger?*

[If patient reports any persecutory ideas/delusions, ask the following]:  
*How often have you been concerned that [use patient’s description]? Have you told anyone about these experiences?*

- 2      Very Mild  
Seems on guard. Reluctant to respond to some “personal” questions. Reports being overly self-conscious in public.
- 3      Mild

Describes incidents in which others have harmed or wanted to harm him/her that sound plausible. Patient feels as if others are watching, laughing, or criticizing him/her in public, but this occurs only occasionally or rarely. Little or no preoccupation.

- 4      Moderate  
Says others are talking about him/her maliciously, have negative intentions, or may harm him/her. Beyond the likelihood of plausibility, but not delusional. Incidents of suspected persecution occur occasionally (less than once per week) with some preoccupation.
- 5      Moderately Severe  
Same as 4, but incidents occur frequently, such as more than once per week. Patient is moderately preoccupied with ideas of persecution OR patient reports persecutory delusions expressed with much doubt (e.g., partial delusion).
- 6      Severe  
Delusional—speaks of Mafia plots, the FBI, or others poisoning his/her food, persecution by supernatural forces.
- 7      Extremely Severe  
Same as 6, but the beliefs are bizarre or more preoccupying. Patient tends to disclose or act on persecutory delusions.

10.    HALLUCINATIONS: Reports of perceptual experiences in the absence of relevant external stimuli. When rating degree to which functioning is disrupted by hallucinations, include preoccupation with the content and experience of the hallucinations, as well as functioning disrupted by acting out on the hallucinatory content (e.g., engaging in deviant behavior due to command hallucinations). Include thoughts aloud (“gedankenlautwerden”) or pseudohallucinations (e.g., hears a voice inside head) if a voice quality is present.

*Do you ever seem to hear your name being called?*

*Have you heard any sounds or people talking to you or about you when there has been nobody around?*

*[If hears voices]: What does the voice/voices say? Did it have a voice quality?*

*Do you ever have visions or see things that others do not see? What about smell odors that others do not smell?*

*[If patient reports hallucinations, ask the following]:*

*Have these experiences interfered with your ability to perform your usual activities/work? How do you explain them? How often do they occur?*

- 2      Very Mild

While resting or going to sleep, sees visions, smells odors, or hears voices, sounds or whispers in the absence of external stimulation, but no impairment in functioning.

- 3 Mild  
While in a clear state of consciousness, hears a voice calling the subject's name, experiences non-verbal auditory hallucinations (e.g., sounds or whispers), formless visual hallucinations, or has sensory experiences in the presence of a modality-relevant stimulus (e.g., visual illusions) infrequently (e.g., 1-2 times per week) and with no functional impairment.
- 4 Moderate  
Occasional verbal, visual, gustatory, olfactory, or tactile hallucinations with no functional impairment OR non-verbal auditory hallucinations/visual illusions more than infrequently or with impairment.
- 5 Moderately Severe  
Experiences daily hallucinations OR some areas of functioning are disrupted by hallucinations.
- 6 Severe  
Experiences verbal or visual hallucinations several times a day OR many areas of functioning are disrupted by these hallucinations.
- 7 Extremely Severe  
Persistent verbal or visual hallucinations throughout the day OR most areas of functioning are disrupted by these hallucinations.

11. UNUSUAL THOUGHT CONTENT: Unusual, odd, strange or bizarre thought content. Rate the degree of unusualness, not the degree of disorganization of speech. Delusions are patently absurd, clearly false or bizarre ideas that are expressed with partial or full conviction. Consider the patient to have full conviction if he/she has acted as though the delusional belief were true. Ideas of reference/persecution can be differentiated from delusions in that ideas are expressed with much doubt and contain more elements of reality. Include thought insertion, withdrawal and broadcast. Include grandiose, somatic and persecutory delusions even if rated elsewhere. Note: if Somatic Concern, Guilt, Suspiciousness, or Grandiosity are rated "6" or "7" due to delusions, then Unusual Thought Content *must* be rated a "4" or above.

*Have you been receiving any special messages from people or from the way things are arranged around you? Have you seen any references to yourself on T.V. or in the newspapers?*

*Can anyone read your mind?*

*Do you have a special relationship with God?*

*Is anything like electricity, X-rays, or radio waves affecting you?*

*Are thoughts put into your head that are not your own?  
Have you felt that you were under the control of another person or force?*

[If patient reports any odd ideas/delusions, ask the following]:  
*How often do you think about [use patient's description]?  
Have you told anyone about these experiences? How do you explain the things  
that have been happening [specify]?*

- 2      Very Mild  
Ideas of reference (people may stare or may laugh at him/her), ideas of persecution (people may mistreat him/her). Unusual beliefs in psychic powers, spirits, UFO's, or unrealistic beliefs in one's own abilities. Not strongly held. Some doubt.
- 3      Mild  
Same as 2, but degree of reality distortion is more severe as indicated by highly unusual ideas or greater conviction. Content may be typical of delusions (even bizarre), but without full conviction. The delusion does not seem to have fully formed, but is considered as one possible explanation for an unusual experience.
- 4      Moderate  
Delusion present but no preoccupation or functional impairment. May be an encapsulated delusion or a firmly endorsed absurd belief about past delusional circumstances.
- 5      Moderately Severe  
Full delusion(s) present with some preoccupation OR some areas of functioning disrupted by delusional thinking.
- 6      Severe  
Full delusion(s) present with much preoccupation OR many areas of functioning are disrupted by delusional thinking.
- 7      Extremely Severe  
Full delusion(s) present with almost total preoccupation OR most areas of functioning are disrupted by delusional thinking.

Rate items 12-13 on the basis of patient's self-report and observed behavior.

12.    BIZARRE BEHAVIOR: Reports of behaviors which are odd, unusual, or psychotically criminal. Not limited to interview period. Include inappropriate sexual behavior and inappropriate affect.  
*Have you done anything that has attracted the attention of others?  
Have you done anything that could have gotten you in trouble with the police?  
Have you done anything that seemed unusual or disturbing to others?*



- 2      Very Mild  
Slightly odd or eccentric public behavior, e.g., occasionally giggles to self, fails to make appropriate eye contact, that does not seem to attract the attention of others OR unusual behavior conducted in private, e.g., innocuous rituals, that would not attract the attention of others.
- 3      Mild  
Noticeably peculiar public behavior, e.g., inappropriately loud talking, makes inappropriate eye contact, OR private behavior that occasionally, but not always, attracts the attention of others, e.g., hoards food, conducts unusual rituals, wears gloves indoors.
- 4      Moderate  
Clearly bizarre behavior that attracts or would attract (if done privately) the attention or concern of others, but with no corrective intervention necessary. Behavior occurs occasionally, e.g., fixated staring into space for several minutes, talks back to voices once, inappropriate giggling/laughter on 1-2 occasions, talking loudly to self.
- 5      Moderately Severe  
Clearly bizarre behavior that attracts or would attract (if done privately) the attention of others or the authorities, e.g., fixated staring in a socially disruptive way, frequent inappropriate giggling/laughter, occasionally responds to voices, or eats non-foods.
- 6      Severe  
Bizarre behavior that attracts attention of others and intervention by authorities, e.g., directing traffic, public nudity, staring into space for long periods, carrying on a conversation with hallucinations, frequent inappropriate giggling/laughter.
- 7      Extremely Severe  
Serious crimes committed in a bizarre way that attract the attention of others and the control of authorities, e.g., sets fires and stares at flames OR almost constant bizarre behavior, e.g., inappropriate giggling/laughter, responds only to hallucinations and cannot be engaged in interaction.
13.    SELF-NEGLECT: Hygiene, appearance, or eating behavior below usual expectations, below socially acceptable standards, or life-threatening.

*How has your grooming been lately? How often do you change your clothes? How often do you take showers? Has anyone (parents/staff) complained about your grooming or dress? Do you eat regular meals?*

- 2      Very Mild

Hygiene/appearance slightly below usual community standards, e.g., shirt out of pants, buttons unbuttoned, shoelaces untied, but no social or medical consequences.

- 3 Mild  
Hygiene/appearance occasionally below usual community standards, e.g., irregular bathing, clothing is stained, hair uncombed, occasionally skips an important meal. No social or medical consequences.
- 4 Moderate  
Hygiene/appearance is noticeably below usual community standards, e.g., fails to bathe or change clothes, clothing very soiled, hair unkempt, needs prompting, noticeable by others OR irregular eating and drinking with minimal medical concerns and consequences.
- 5 Moderately Severe  
Several areas of hygiene/appearance are below usual community standards OR poor grooming draws criticism by others, and requires regular prompting. Eating or hydration are irregular and poor, causing some medical problems.
- 6 Severe  
Many areas of hygiene/appearance are below usual community standards, does not always bathe or change clothes even if prompted. Poor grooming has caused social ostracism at school/residence/work, or required intervention. Eating erratic and poor, may require medical intervention.
- 7 Extremely Severe  
Most areas of hygiene/appearance/nutrition are extremely poor and easily noticed as below usual community standards OR hygiene/appearance/nutrition requires urgent and immediate medical intervention.

14. DISORIENTATION: Does not comprehend situations or communications, such as questions asked during the entire BRPS interview. Confusion regarding person, place, or time. Do not rate if incorrect responses are due to delusions.

*May I ask you some standard questions we ask everybody?*

*How old are you? What is the date? [allow + or - 2 days].*

*What is this place called? What year were you born? Who is the president?*

- 2 Very Mild  
Seems muddled or mildly confused 1-2 times during interview. Oriented to person, place and time.
- 3 Mild

Occasionally muddle or mildly confused 3-4 times during interview. Minor inaccuracies in person, place, or time, e.g., date off by more than + or – 2 days, or gives wrong division of hospital.

- 4 Moderate  
Frequently confused during interview. Minor inaccuracies in person, place, or time are noted, as in “3” above. In addition, may have difficulty remembering general information, e.g., name of president.
- 5 Moderately Severe  
Markedly confused during interview, or to person, place, or time. Significant inaccuracies are noted, e.g., date off by more than one week, or cannot give correct name of hospital. Has difficulty remembering personal information, e.g., where he/she was born, or recognizing familiar people.
- 6 Severe  
Disoriented to person, place, or time, e.g., cannot give correct month and year. Disoriented in 2 out of 3 spheres.
- 7 Extremely Severe  
Grossly disoriented to person, place, or time, e.g., cannot give name or age. Disoriented in all three spheres.

Rate items 15-24 on the basis of observed behavior and speech.

15. CONCEPTUAL DISORGANIZATION: Degree to which speech is confused, disconnected, vague or disorganized. Rate tangentiality, circumstantiality, sudden topic shifts, incoherence, derailment, blocking, neologisms, and other speech disorders. Do not rate content of speech.
- 2 Very Mild  
Peculiar use of words or rambling but speech is comprehensible.
- 3 Mild  
Speech a bit hard to understand due to tangentiality, circumstantiality or sudden topic shifts.
- 4 Moderate  
Speech difficult to understand due to tangentiality, circumstantiality, idiosyncratic speech, or topic shifts on many occasions OR 1-2 instances of incoherent phrases.
- 5 Moderately Severe

Speech difficult to understand due to circumstantiality, tangentiality, neologisms, blocking, or topic shifts most of the time OR 3-5 instances of incoherent phrases.

- 6 Severe  
Speech is incomprehensible due to severe impairments most of the time. Many BPRS items cannot be rated by self-report alone.
- 7 Extremely Severe  
Speech is incomprehensible throughout interview.

6. BLUNTED AFFECT: Restricted range in emotional expressiveness of face, voice and gestures. Marked indifference or flatness even when discussing distressing topics. In the case of euphoric or dysphoric patients, rate Blunted Affect if a flat quality is also clearly present.

Use the following probes at end of interview to assess emotional responsivity:  
*Have you heard any good jokes lately? Would you like to hear a joke?*

- 2 Very Mild  
Emotional range is slightly subdued or reserved but displays appropriate facial expressions and tone of voice that are within normal limits.
- 3 Mild  
Emotional range overall is diminished, subdued, or reserved, without many spontaneous and appropriate emotional responses. Voice tone is slightly monotonous.
- 4 Moderate  
Emotional range is noticeably diminished, patient doesn't show emotion, smile, or react to distressing topics except infrequently. Voice tone is monotonous or there is noticeable decrease in spontaneous movements. Displays of emotion or gestures are usually followed by a return to flattened affect.
- 5 Moderately Severe  
Emotional range very diminished, patient doesn't show emotion, smile or react to distressing topics except minimally, few gestures, facial expression does not change very often. Voice tone is monotonous much of the time.
- 6 Severe  
Very little emotional range or expression. Mechanical in speech and gestures most of the time. Unchanging facial expression. Voice tone is monotonous most of the time.

- 7      Extremely Severe  
Virtually no emotional range or expressiveness, stiff movements. Voice tone is monotonous all of the time.
17.    EMOTIONAL WITHDRAWAL: Deficiency in patient's ability to relate emotionally during interview situation. Use your own feeling as to the presence of an "invisible barrier" between patient and interviewer. Include withdrawal apparently due to psychotic processes.
- 2      Very Mild  
Lack of emotional involvement shown by occasional failure to make reciprocal comments, occasionally appearing preoccupied, or smiling in a stilted manner, but spontaneously engages the interviewer most of the time.
- 3      Mild  
Lack of emotional involvement shown by noticeable failure to make reciprocal comments, appearing preoccupied, or lacking in warmth, but responds to interviewer when approached.
- 4      Moderate  
Emotional contact not present much of the interview because subject does not elaborate responses, fails to make eye contact, doesn't seem to care if interviewer is listening, or may be preoccupied with psychotic material.
- 5      Moderately Severe  
Same as "4" but emotional contact not present most of the interview.
- 6      Severe  
Actively avoids emotional participation. Frequently unresponsive or responds with yes/no answers (not solely due to persecutory delusions). May leave during interview or just not respond at all.
- 7      Extremely Severe  
Consistently avoids emotional participation. Unresponsive or responds with yes/no answers (not solely due to persecutory delusions). May leave during interview or just not respond at all.
18.    MOTOR RETARDATION: Reduction in energy level evidenced by slowed movements and speech, reduced body tone, decreased number of spontaneous body movements. Rate on the basis of observed behavior of the patient only. Do not rate on the basis of patient's subjective impression of his own energy level. Rate regardless of medication effects.
- 2      Very Mild

- Slightly slowed or reduced movements or speech compared to most people.
- 3 Mild  
Noticeably slowed or reduced movements or speech compared to most people.
- 4 Moderate  
Large reduction or slowness in movements or speech.
- 5 Moderately Severe  
Seldom moves or speaks spontaneously OR very mechanical or stiff movements.
- 6 Severe  
Does not move or speak unless prodded or urged.
- 7 Extremely Severe  
Frozen, catatonic.
19. TENSION: Observable physical and motor manifestations of tension, “nervousness,” and agitation. Self-reported experiences of tension should be rated under the item on anxiety. Do not rate if restlessness is solely akathisia, but do rate if akathisia is exacerbated by tension.
- 2 Very Mild  
More fidgety than most but within normal range. A few transient signs of tension, e.g., picking at fingernails, foot wagging scratching scalp several times, or finger tapping.
- 3 Mild  
Same as “2,” but with more frequent or exaggerated signs of tension.
- 4 Moderate  
Many and frequent motor tension with one or more signs sometimes occurring simultaneously, e.g., wagging one’s foot while wringing hands together. There are times when no signs of tension are present.
- 5 Moderately Severe  
Many of frequent signs of motor tension with one or more signs often occurring simultaneously. There are still rare times when no signs of tension are present.
- 6 Severe  
Same as “5,” but signs of tension are continuous.
- 7 Extremely Severe

Multiple motor manifestations of tension are continuously present, e.g., continuous pacing and hand wringing.

20. UNCOOPERATIVENESS: Resistance and lack of willingness to cooperate with the interview. The uncooperativeness might result from suspiciousness. Rate only uncooperativeness in relation to the interview, not behaviors involving peers and relatives.
- 2     Very Mild  
Shows nonverbal signs of reluctance, but does not complain or argue.
  - 3     Mild  
Gripes or tries to avoid complying, but goes ahead without argument.
  - 4     Moderate  
Verbally resists but eventually complies after questions are rephrased or repeated.
  - 5     Moderately Severe  
Same as “4,” but some information necessary for accurate ratings is withheld.
  - 6     Severe  
Refuses to cooperate with interview, but remains in interview situation.
  - 7     Extremely Severe  
Same as “6,” with active efforts to escape the interview.
21. EXCITEMENT: Heightened emotional tone, or increased emotional reactivity to interviewer or topics being discussed, as evidenced by increased intensity of facial expressions, voice tone, expressive gestures or increase in speech quantity and speed.
- 2     Very Mild  
Subtle and fleeting or questionable increase in emotional intensity. For example, at times seems keyed-up or overly alert.
  - 3     Mild  
Subtle but persistent increase in emotional intensity. For example, lively use of gestures and variation of voice tone.
  - 4     Moderate  
Definite but occasional increase in emotional intensity. For example, reacts to interviewer or topics that are discussed with noticeable emotional intensity. Some pressured speech.

- 5      Moderately Severe  
Definite and persistent increase in emotional intensity. For example, reacts to many stimuli, whether relevant or not, with considerable emotional intensity. Frequent pressured speech.
- 6      Severe  
Marked increase in emotional intensity. For example. Reacts to most stimuli with inappropriate emotional intensity. Has difficulty settling down or staying on task. Often restless, impulsive, or speech is often pressured.
- 7      Extremely Severe  
Marked and persistent increase in emotional intensity. Reacts to all stimuli with inappropriate intensity, impulsiveness. Cannot settle down or stay on task. Very restless and impulsive most of the time. Constant pressured speech.
22.    DISTRACTIBILITY: Degree to which observed sequences of speech and actions are interrupted by stimuli unrelated to the interview. Distractibility is rated when the patient shows a change in the focus of attention as characterized by a pause in speech or a marked shift in gaze. Patient's attention may be drawn to noise in adjoining room, books on a shelf, interviewer's clothing, etc. Do not rate circumstantiality, tangentiality, or flight of ideas. Also, do not rate rumination with delusional material. Rate even if the distracting stimulus cannot be identified.
- 2      Very Mild  
Generally can focus on interviewer's questions with only 1 distraction or inappropriate shift of attention of brief duration.
- 3      Mild  
Patient shifts focus of attention to matters unrelated to the interview 2-3 times.
- 4      Moderate  
Often responsive to irrelevant stimuli in the room, e.g., averts gaze from the interviewer.
- 5      Moderately Severe  
Same as above, but now distractibility clearly interferes with the flow of the interview.
- 6      Severe  
Extremely difficult to conduct interview or pursue a topic due to preoccupation with irrelevant stimuli.



- 7 Extremely Severe  
Impossible to conduct interview due to preoccupation with irrelevant stimuli.
23. MOTOR HYPERACTIVITY: Increase in energy level evidenced in more frequent movement and/or rapid speech. Do not rate if restlessness is due to akathisia.
- 2 Very Mild  
Some restlessness, difficulty sitting still, lively facial expressions, or somewhat talkative.
- 3 Mild  
Occasionally very restless, definite increase in motor activity, lively gestures, 1-3 brief instances of pressured speech.
- 4 Moderate  
Very restless, fidgety, excessive facial expressions or nonproductive and repetitious motor movements. Much pressured speech, up to one third of the interview.
- 5 Moderately Severe  
Frequently restless, fidgety. Many instances of excessive nonproductive and repetitious motor movements. On the move most of the time. Frequent pressured speech, difficult to interrupt. Rises on 1-2 occasions to pace.
- 6 Severe  
Excessive motor activity, restlessness, fidgety, loud tapping, noisy, etc. throughout most of the interview. Speech can only be interrupted with much effort. Rises on 3-4 occasions to pace.
- 7 Extremely Severe  
Constant excessive motor activity throughout entire interview, e.g., constant pacing, constant pressured speech with no pauses, interviewee can only be interrupted briefly and only small amounts of the relevant information can be obtained.
24. MANNERISMS AND POSTURING: Unusual and bizarre behavior, stylized movements or acts, or any postures which are clearly uncomfortable or inappropriate. Exclude obvious manifestations of medication side-effects. Do not include nervous mannerisms that are not odd or unusual.
- 2 Very Mild

Eccentric or odd mannerisms or activity that ordinary persons would have difficulty explaining, e.g., grimacing, picking. Observed once for a brief period.

- 3 Mild  
Same as “2,” but occurring on two occasions of brief duration.
- 4 Moderate  
Mannerisms or posturing, e.g., stylized movements or acts, rocking, nodding, rubbing or grimacing observed on several occasions for brief periods or infrequently but very odd. For example, uncomfortable posture maintained for 5 seconds more than twice.
- 5 Moderately Severe  
Same as “4,” but occurring often, or several examples of very odd mannerisms or posturing that are idiosyncratic to the patient.
- 6 Severe  
Frequent stereotyped behavior, assumes and maintains uncomfortable or inappropriate postures, intense rocking, smearing, strange rituals, or fetal posturing. Subject can interact with people and the environment for brief periods despite these behaviors.
- 7 Extremely Severe  
Same as “6,” but subject cannot interact with people or the environment due to these behaviors.

## Brief Psychiatric Rating Scale (Version 4.0)

Name/ID # \_\_\_\_\_ Date \_\_\_\_\_ Rater \_\_\_\_\_  
 Hospital/Location \_\_\_\_\_ Period of assessment \_\_\_\_\_

NA            1            2            3            4            5            6            7  
 Not Assessed Not Present Very Mild Mild Moderate Moderately Severe Severe Extremely Severe

Rate items 1-14 on the basis of patient's self-report during interview. Mark "NA" for symptoms not assessed.

Note items 7, 12, and 13 are also rated on observed behavior during the interview. PROVIDE EXAMPLES.

1.	Somatic Concern	NA	1	2	3	4	5	6	7	
2.	Anxiety		NA	1	2	3	4	5	6	7
3.	Depression		NA	1	2	3	4	5	6	7
4.	Suicidality		NA	1	2	3	4	5	6	7
5.	Guilt		NA	1	2	3	4	5	6	7
6.	Hostility	NA	1	2	3	4	5	6	7	
7.	Elevated Mood		NA	1	2	3	4	5	6	7
8.	Grandiosity		NA	1	2	3	4	5	6	7
9.	Suspiciousness		NA	1	2	3	4	5	6	7
10.	Hallucinations		NA	1	2	3	4	5	6	7
11.	Unusual Thought Content	NA	1	2	3	4	5	6	7	
12.	Bizarre Behavior	NA	1	2	3	4	5	6	7	
13.	Self-neglect		NA	1	2	3	4	5	6	7
14.	Disorientation		NA	1	2	3	4	5	6	7

Rate items 15-24 on the basis of observed behavior or speech of the patient during the interview.

15.	Conceptual Disorganization		NA	1	2	3	4	5	6	7
16.	Blunted Affect		NA	1	2	3	4	5	6	7
17.	Emotional Withdrawal		NA	1	2	3	4	5	6	7
18.	Motor Retardation		NA	1	2	3	4	5	6	7
19.	Tension		NA	1	2	3	4	5	6	7
20.	Uncooperativeness		NA	1	2	3	4	5	6	7
21.	Excitement		NA	1	2	3	4	5	6	7
22.	Distractibility		NA	1	2	3	4	5	6	7
23.	Motor Hyperactivity		NA	1	2	3	4	5	6	7
24.	Mannerisms and Posturing	NA	1	2	3	4	5	6	7	

Sources of information (check all applicable):            Explain here if validity of assessment is questioned

_____ Patient	_____ Symptoms possibly drug-induced
_____ Parents/Relatives	_____ Underreported due to lack of rapport
_____ Mental Health Professionals	_____ Underreported due to negative symptoms
_____ Chart	_____ Patient uncooperative
	_____ Difficult to assess due to formal thought

disorder

Confidence in assessment:

\_\_\_\_\_ 1: Not at all 5: Very confident

\_\_\_\_\_ Other: \_\_\_\_\_

Tables

**Table 1: Number and Percentage of Dropout and Completer Families**

	Completers	Dropouts
CIT-S & PSY-ED (combined), n= 115	52 families (45.2%)	63 families (54.8%)
CIT-S only, n= 64	26 families (40.6%)	38 families (59.4%)
PSY-ED only, n= 51	26 families (51.0%)	25 families (49.0%)

**Table 2: Descriptive Statistics for Continuous Variables (Patients)**

	Variable	n	Mean	Standard Deviation	Skewness	Kurtosis	Possible Range	Observed Range
<b>Primary Study Variables</b>	FES Cohesion	89	5.74	2.68	-.596	-.849	0-9	0-9
	FES Religion	90	6.13	2.15	-1.165	.959	0-9	0-9
	SCS Interdependence	92	59.26	14.33	-.875	1.066	12-84	14-84
	SCS Independence	92	64.00	13.38	-.947	.955	12-84	20-84
	RCAS Spiritual	94	34.49	11.20	-.392	-.965	12-48	12-48
	RCAS Good Deeds	94	15.24	5.44	.144	-.941	6-24	6-24
	RCAS Discontent	94	5.80	2.54	.801	-.092	3-12	3-12
	RCAS Interpersonal	94	4.18	2.21	.610	-1.087	2-8	2-8
	RCAS Plead	94	7.53	3.06	.147	-1.237	3-12	3-12
	RCAS Relig Avoid	94	7.22	2.85	.331	-.987	3-12	3-12
<b>Covariates</b>	Patient age	95	38.17	13.02	.298	-.709	18-100+	18-75
	MARS	75	6.29	1.98	-.420	-.300	0-10	1-10
	BPRS	91	54.23	12.97	-.185	.014	24-168	24-87
	DAST (original scores)	77	2.29	4.18	2.059	3.252	0-20	0-16
	DAST (sq root)	77	.8720	1.24	1.199	.186	0-4	0-4

FES Cohesion= score on the cohesion subscale of the FES; FES Religion= score on the religiosity subscale of the FES; SCS Interdependence= score on the interdependence subscale of the SCS; SCS Independence= score on the independence subscale of the SCS; RCAS Spiritual= score on the spiritual based coping subscale of the RCAS; RCAS Good Deeds= score on the good deeds subscale of the RCAS; RCAS Discontent= score on the discontent subscale of the RCAS; RCAS Interpersonal= score on the interpersonal religious support subscale of the RCAS; RCAS Plead = score on the plead subscale of the RCAS; RCAS Relig Avoid= score on the religious avoidance subscale of the RCAS; MARS= total scores for patient medication adherence on the MARS; BPRS= patient total symptom severity scores on the BPRS; DAST (original scores) = original, untransformed total scores for drug use on the DAST; DAST (sq root) = square root transformed DAST values

**Table 3: Descriptive Statistics for Continuous Variables (Caregivers)**

	Variable	n	Mean	Standard Deviation	Skewness	Kurtosis	Possible Range	Observed Range
<b>Primary Study Variables</b>	FES Cohesion	113	6.15	2.13	-.525	-.431	0-9	0-9
	FES Religion	114	6.06	2.02	-.627	-.792	0-9	2-9
	SCS Interdependence	112	62.01	10.66	-.261	-.548	12-84	35-84
	SCS Independence	113	66.93	9.23	-.243	-.786	12-84	48-84
	RCAS Spiritual	114	35.39	10.72	-.574	-.906	12-48	12-48
	RCAS Good Deeds	113	15.54	5.08	-.066	-.895	6-24	6-24
	RCAS Discontent	113	4.82	2.15	1.126	.406	3-12	3-11
	RCAS Interpersonal	114	4.32	2.22	.413	-1.296	2-8	2-8
	RCAS Plead	114	7.18	2.84	.099	-1.052	3-12	3-12
	RCAS Relig Avoid	113	6.51	3.04	.380	.227	3-12	3-12
<b>Covariates</b>	Caregiver age	115	50.05	14.56	-.053	-.176	18-100+	16-86
	DAST (original scores)	89	1.36	3.11	3.214	11.449	0-20	0-17
	DAST (sq root)	89	.5839	1.02	1.713	2.184	0-4.12	0-4.12

FES Cohesion= score on the cohesion subscale of the FES; FES Religion= score on the religiosity subscale of the FES; SCS Interdependence= score on the interdependence subscale of the SCS; SCS Independence= score on the independence subscale of the SCS; RCAS Spiritual= score on the spiritual based coping subscale of the RCAS; RCAS Good Deeds= score on the good deeds subscale of the RCAS; RCAS Discontent= score on the discontent subscale of the RCAS; RCAS Interpersonal= score on the interpersonal religious support subscale of the RCAS; RCAS Plead = score on the plead subscale of the RCAS; RCAS Relig Avoid= score on the religious avoidance subscale of the RCAS; DAST (original scores) = original, untransformed total scores for drug use on the DAST; DAST (sq root) = square root transformed DAST values

**Table 4: Patient Demographic Variables**

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male = 57	59.4%
	Female= 39	40.6%
Ethnicity	Caucasian= 20	21.3%
	African-Amer= 25	26.6%
	H/L= 46	48.9%
	Other= 3	3.2%
Education	Advanced deg.= 1	1.1%
	College degree= 12	12.8%
	Some college= 30	31.9%
	H.S.= 25	26.6%
	Some H.S.= 18	19.1%
	Grade 8= 3	3.2%
	Below grade 8= 5	5.3%

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male = 44 Female= 71	38.3% 61.7%
Ethnicity	Caucasian= 24 African-Amer= 34 H/L= 54 Other= 3	20.7% 29.6% 47.0% 2.6%
Education	Advanced deg.= 9 College degree= 27 Some college= 25 H.S.= 33 Some H.S.= 12 Grade 8= 6 Below grade 8= 2	7.8% 23.7% 21.9% 28.9% 10.5% 5.3% 1.8%
Relationship to patient	Mother= 40 Father= 9 S.O.= 33 Sister= 4 Brother= 5 Daughter= 3 Son= 4 Friend= 9 Uncle= 1 Niece= 1 Grandmother= 1 Cousin= 4 Grandson= 1	34.8% 7.8% 28.7% 3.5% 4.3% 2.6% 3.5% 7.8% .9% .9% .9% 3.5% .9%
Amount of weekly social contact with patient	0-2 hours= 6 3-5 hours= 3 6-10 hours= 4 11-15 hours= 4 16-20 hours= 2 20-50 hours= 17 50-100 hours= 10 100+ hours or lives with IP= 40	7.0% 3.5% 4.7% 4.7% 2.3% 19.8% 11.6% 46.5%

**Table 6: Correlation Matrix Between Attrition and Potential Covariates (CIT-S & PSY-ED)**

Variable	1	2	3	4	5	6	7
<b>1. Dropout</b>	1						
<b>2. IPage</b>	.232*	1					
<b>3. CGage</b>	-.353**	.043	1				
<b>4.IPdast_tran</b>	-.104	-.042	.018	1			
<b>5.CGdast_tran</b>	.183	.088	-.201	.125	1		
<b>6. BPRS</b>	.463**	.151	-.065	.143	.181	1	
<b>7. MARS</b>	-.182	.134	.007	-.145	-.190	-.107	1

Dropout= attrition status (dropout or completer); IPage= identified patient age; CGage= caregiver age; IPdast\_tran= square root transformed DAST score (patients); CGdast\_tran= square root transformed DAST score (caregivers); BPRS = patient total BPRS scores; MARS= total scores for patient medication adherence on the MARS

\* $p < .05$

\*\* $p < .01$

**Table 7: Correlation Matrix Between Attrition and Potential Covariates (PSY-ED only)**

Variable	1	2	3	4	5	6	7
<b>1. Dropout</b>	1						
<b>2. IPage</b>	.370*	1					
<b>3. CGage</b>	-.296*	-.013	1				
<b>4.IPdast_tran</b>	-.253	.061	.235	1			
<b>5.CGdast_tran</b>	.054	.169	-.031	.209	1		
<b>6. BPRS</b>	.669**	.074	.058	-.419*	-.579**	1	
<b>7. MARS</b>	-.111	.288	-.323*	.173	.217	-.355	1

Dropout= attrition status (dropout or completer); IPage= identified patient age; CGage= caregiver age; IPdast\_tran= square root transformed DAST score (patients); CGdast\_tran= square root transformed DAST score (caregivers); BPRS = patient total BPRS scores; MARS= total scores for patient medication adherence on the MARS

\* $p < .05$

\*\* $p < .01$



**Table 8: Correlation Matrix Between Attrition and Potential Covariates (CIT-S only)**

Variable	1	2	3	4	5	6	7
<b>1. Dropout</b>	1						
<b>2. IPage</b>	.151	1					
<b>3. CGage</b>	-.393**	.067	1				
<b>4.IPdast_tran</b>	.010	-.113	-.077	1			
<b>5.CGdast_tran</b>	.270	.044	-.287*	.069	1		
<b>6. BPRS</b>	.334*	.078	.043	.117	.157	1	
<b>7. MARS</b>	-.243	.177	-.018	.046	.040	.065	1

Dropout= attrition status (dropout or completer); IPage= identified patient age; CGage= caregiver age; IPdast\_tran= square root transformed DAST score (patients); CGdast\_tran= square root transformed DAST score (caregivers); BPRS = patient total BPRS scores; MARS= total scores for patient medication adherence on the MARS

\* $p < .05$

\*\* $p < .01$

**Table 9: Correlation Matrix Between Attrition and Primary Study Variables (CITS and PSY-ED)**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1. Drop	1																					
2. PtCoh	.281**	1																				
3. PtRel	.114	.362**	1																			
4. PtInter	-.055	.076	.131	.293**	1																	
5. PtInde	.277*	.040	.520**	.282**	.369**	1																
6. PtSpir	.338*	.108	.553**	.314**	.207	.761**	1															
7. PtGood	-.066	-.183	-.142	-.039	.018	-.010	-.015	1														
8. PtDisc	.304*	.044	.379**	.138	-.042	.526**	.669**	.146	1													
9. PtSupp	.372**	-.202	.196	.024	.026	.351**	.449**	.296**	.356**	1												
10. PtPlea	.256*	-.021	.398**	.241*	.275**	.777**	.696**	.097	.493**	.454**	1											
11. PtAv	.014	.225*	.037	.160	-.075	-.056	-.054	.024	-.021	-.165	-.091	1										
12. CgCo	.203	-.008	.410**	.225*	-.006	.258*	.277**	.001	.281**	.232*	-.107	.145	1									
13. CgRel	-.026	-.098	.042	.143	.191	-.025	.017	-.040	-.005	-.012	-.153	-.098	.147	1								
14. CgInt	.163	-.070	-.109	.109	.206	.064	-.066	-.026	.035	-.074	.105	.053	.146	.288**	1							
15. CgInd	.227*	-.050	.392**	.248*	-.080	.307**	.316**	.011	.291**	.165	-.035	.061	.657**	.276**	.177	1						
16. CgSprit	.286**	-.110	.322**	.221*	-.102	.300**	.318**	-.067	.357**	.222*	-.056	.042	.560**	.224*	.278**	.777**	1					
17. CgGood	.075	-.158	.014	-.036	-.078	-.031	-.008	.010	-.041	.079	-.023	-.072	.014	.016	-.149	.004	.001	1				
18. CgDisc	.248**	-.074	.201	.196	.072	.232*	.228*	-.044	.221*	-.017	.054	.161	.383**	.128	.104	.467**	.571**	-.095	1			
19. CgSupp	.056	-.093	.132	.084	-.074	-.029	.030	.085	.141	.233*	.109	.248**	.161	.212*	.024	.341**	.325**	.194*	.148	1		
20. CgPlea	.345**	-.127	.352**	.174	.010	.314**	.378**	.005	.316**	.253*	.109	.020	.442**	.191*	.183	.660**	.603**	.402**	.427**	.427**	1	
21. CgAvd																						1

Drop= dropout or attrition status; PtCoh= patient scores on the FES cohesion subscale; PtRel= patient scores on the FES religiosity subscale; PtInter= patient scores on the SCS interdependence subscale; PtInde= patient scores on the SCS independence subscale; PtSpir= patient scores on the RCAS spiritual based coping subscale; PtGood= patient scores on the RCAS good deeds subscale; PtDisc= patient scores on the RCAS discontent subscale; PtSupp= patient scores on the RCAS interpersonal religious support subscale; PtPlea= patient scores on the RCAS plead subscale; PtAv= patient scores on the RCAS religious avoidance subscale; CgCo= caregiver scores on the FES cohesion subscale; CgRel= caregiver scores on the FES religiosity subscale; CgInt= caregiver scores on the SCS interdependence subscale; CgInd= caregiver scores on the SCS independence subscale; CgSpir= caregiver scores on the RCAS spiritual based coping subscale; CgGood= caregiver scores on the RCAS good deeds subscale; CgDisc= caregiver scores on the RCAS discontent subscale; CgSupp= caregiver scores on the RCAS interpersonal religious support subscale; CgPlea= caregiver scores on the RCAS plead subscale; CgAvd= caregiver scores on the RCAS religious avoidance subscale; \* $p < .05$ ; \*\* $p < .01$

**Table 10: Correlation Matrix Between Attrition and Primary Study Variables (PSY-ED only)**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1. Drop	1																					
2. PtCoh	-.218	1																				
3. PtRel	.228	.157	1																			
4. PtInter	.124	.440**	.340*	1																		
5. PtInde	-.324*	.227	.124	.444**	1																	
6. PtSpir	.212	.016	.575**	.317**	.222	1																
7. PtGood	.312*	-.011	.431**	.253	.109	.815**	1															
8. PtDisc	-.035	-.095	-.194	-.002	.073	-.009	-.052	1														
9. PtSupp	.277	-.059	.193	.034	-.179	.507**	.625**	.115	1													
10. PtPlea	.228	-.189	.210	-.002	.109	.325*	.407**	.351*	.397**	1												
11. PtAv	.291	-.082	.440**	.225	.078	.709**	.752**	.098	.586**	.586**	1											
12. CgCo	-.027	.183	-.019	.187	-.069	-.146	-.109	.081	-.125	-.100	-.280	1										
13. CgRel	.155	-.003	.460**	.202	-.016	.285	.264	-.054	.168	.235	.320*	.057	1									
14. CgInt	.019	-.078	-.069	.381*	.192	-.055	-.053	-.078	.008	-.088	-.098	-.234	.001	1								
15. CgInd	-.049	-.010	-.146	.201	.222	.105	.149	.165	.100	.189	.013	-.098	.188	.300*	1							
16. CgSprit	.159	-.089	.461**	.343*	.009	.431**	.365*	-.006	.197	.199	.460*	-.166	.778	.242	.259	1						
17. CgGood	.094	-.226	.387**	.235	.073	.357*	.263	-.061	.199	.232	.360*	-.170	.555	.324*	.364*	.759**	1					
18. CgDisc	.077	-.183	.085	-.060	-.162	.122	-.053	.052	-.051	.068	.072	.005	-.068	-.068	-.305*	.007	-.066	1				
19. CgSupp	.164	-.121	.166	.091	.089	.289	.211	-.038	.106	-.102	.069	.067	.320	.053	.003	.380**	.503**	-.210	1			
20. CgPlea	-.124	-.078	.140	.145	.095	-.032	-.109	.183	-.026	.331*	.180	-.188	.139	.373**	.199	.370**	.355*	.027	.041	1		
21. CgAvd	.284*	-.204	.278	.200	.036	.164	.164	-.023	.082	.176	.157	-.136	.401	.347*	.366**	.647**	.658**	-.062	.427**	.504**	1	

Drop= dropout or attrition status; PtCoh= patient scores on the FES cohesion subscale; PtRel= patient scores on the FES religiosity subscale; PtInter= patient scores on the SCS interdependence subscale; PtInde= patient scores on the SCS independence subscale; PtSpir= patient scores on the RCAS spiritual based coping subscale; PtGood= patient scores on the RCAS good deeds subscale; PtDisc= patient scores on the RCAS discontent subscale; PtSupp= patient scores on the RCAS interpersonal religious support subscale; PtPlea= patient scores on the RCAS plead subscale; PtAv= patient scores on the RCAS religious avoidance subscale; CgCo= caregiver scores on the FES cohesion subscale; CgRel= caregiver scores on the FES religiosity subscale; CgInt= caregiver scores on the SCS interdependence subscale; CgInd= caregiver scores on the SCS independence subscale; CgSprit= caregiver scores on the RCAS spiritual based coping subscale; CgGood= caregiver scores on the RCAS good deeds subscale; CgDisc= caregiver scores on the RCAS discontent subscale; CgSupp= caregiver scores on the RCAS interpersonal religious support subscale; CgPlea= caregiver scores on the RCAS plead subscale; CgAvd= caregiver scores on the RCAS religious avoidance subscale; \* $p < .05$ , \*\* $p < .01$

**Table 11: Correlation Matrix Between Attrition and Primary Study Variables (CIT-S only)**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1. Drop	1																					
2. PtCoh	-.336*	1																				
3. PtRel	.272	.381**	1																			
4. PtInter	.126	.273	.232	1																		
5. PtInde	.199	-.066	.131	.139	1																	
6. PtSpir	.361**	.053	.482**	.254	.477**	1																
7. PtGood	.356**	.225	.653**	.386**	.292*	.729**	1															
8. PtDisc	-.018	-.339*	-.133	-.112	-.064	-.029	.046	1														
9. PtSupp	.324*	.144	.517**	.248	.071	.544**	.702**	.213	1													
10. PtPlea	.481**	-.209	.200	.055	-.030	.375**	.477**	.242	.356**	1												
11. PtAv	.245	.030	.370**	.260	.428**	.825**	.657**	.099	.426**	.365**	1											
12. CgCo	.043	.275	.088	.140	-.074	.018	-.011	-.025	.062	-.226	.022	1										
13. CgRel	.258*	-.018	.366*	.250	.001	.234	.299*	.057	.396**	.238	.186	.230	1									
14. CgInt	-.044	-.117	.096	-.056	.189	-.083	.004	-.065	.001	.040	-.154	-.007	.267	1								
15. CgInd	.374**	-.138	-.069	-.005	.196	.035	-.019	-.155	-.033	-.037	-.132	.204	.101	.294*	1							
16. CgSprit	.290*	-.016	.340*	.152	-.157	.216	.282*	.019	.369**	.144	.210	.245	.554	.300*	.100	1						
17. CgGood	.423**	-.023	.283*	.217	-.224	.264	.357**	-.079	.467**	.215	.180	.185	.575	.167	.215	.793**	1					
18. CgDisc	.195	-.136	-.024	-.012	-.010	-.138	.025	-.030	-.035	.086	-.225	-.135	.032	.074	.006	.002	.046	1				
19. CgSupp	.339**	-.029	.229	.319*	.050	.182	.252	-.083	.338*	.065	.111	.252*	.450	.189	.228	.553**	.639**	.016	1			
20. CgPlea	.186	-.105	.128	.029	-.196	-.025	.129	-.006	.260	.164	-.078	-.294*	.187	.123	-.142	.322**	.309*	.319	.249*	1		
21. CgAvd	.392**	-.065	.398**	.156	-.006	.412**	.526**	.034	.478**	.303*	.336*	.135	.484	.103	.021	.672**	.569**	.109	.387**	.375**	1	

Drop= dropout or attrition status; PtCoh= patient scores on the FES cohesion subscale; PtRel= patient scores on the FES religiosity subscale; PtInter= patient scores on the SCS interdependence subscale; PtInde= patient scores on the SCS independence subscale; PtSpir= patient scores on the RCAS spiritual based coping subscale; PtGood= patient scores on the RCAS good deeds subscale; PtDisc= patient scores on the RCAS discontent subscale; PtSupp= patient scores on the RCAS interpersonal religious support subscale; PtPlea= patient scores on the RCAS plead subscale; PtAv= patient scores on the RCAS religious avoidance subscale; CgCo= caregiver scores on the FES cohesion subscale; CgRel= caregiver scores on the FES religiosity subscale; CgInt= caregiver scores on the SCS interdependence subscale; CgInd= caregiver scores on the SCS independence subscale; CgSpir= caregiver scores on the RCAS spiritual based coping subscale; CgGood= caregiver scores on the RCAS good deeds subscale; CgDisc= caregiver scores on the RCAS discontent subscale; CgSupp= caregiver scores on the RCAS interpersonal religious support subscale; CgPlea= caregiver scores on the RCAS plead subscale; CgAvd= caregiver scores on the RCAS religious avoidance subscale; \* $p < .05$ ; \*\* $p < .01$

<b>Table 12: Summary of Binary Logistic Regression Analyses</b>						
<b>Sample</b>	<b>Covariates controlled for in Primary Analyses</b>	<b>Non-Significant Predictors</b>	<b>Significant Predictors of Family Attrition Status*</b>	<b>Study Hypotheses Supported?</b>	<b>Significant Predictors in Combined Model (covariates + primary study variables)</b>	<b>Study Hypotheses Supported?</b>
CIT-S & PSY-ED (combined), n = 115	<ul style="list-style-type: none"> <li>Age (patients &amp; caregivers)</li> <li>Gender (patients &amp; caregivers)</li> <li>Ethnicity (patients &amp; caregivers)</li> <li>Education (caregivers)</li> <li>Symptom Severity (patients)</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>FES Religiosity</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS subscales 1-6</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>FES Religiosity</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS Plead &amp; Discontent subscales</li> </ul>	<b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>RCAS Spiritual Based Coping</li> <li>RCAS Good Deeds</li> <li>RCAS Interpersonal Religious Support</li> <li>RCAS Religious Avoidance</li> </ul>	<ul style="list-style-type: none"> <li>Hypothesis 5- supported</li> <li>Results in opposite direction of Hypothesis 4</li> </ul>	<ul style="list-style-type: none"> <li>Covariates of caregiver gender, caregiver education, patient symptom severity</li> <li>No primary study variables remained significant predictors of attrition</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
PSY-ED only, n = 51	<ul style="list-style-type: none"> <li>Age (patients &amp; caregivers)</li> <li>Gender (caregivers)</li> <li>Symptom Severity (patients)</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>FES Religiosity</li> <li>SCS Interdependence</li> <li>RCAS subscales 1-5</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS subscales 2-6</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>SCS Independence</li> <li>RCAS Religious Avoidance</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>FES Religiosity</li> <li>RCAS Spiritual Based Coping</li> </ul>	<ul style="list-style-type: none"> <li>Hypothesis 2- supported</li> <li>Hypothesis 5- supported</li> <li>Results in opposite direction of Hypothesis 4</li> </ul>	n/a	n/a
CIT-S only, n=64	<ul style="list-style-type: none"> <li>Age (caregivers)</li> <li>Ethnicity (patients &amp; caregivers)</li> <li>Education (caregivers)</li> <li>Symptom Severity (patients)</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>FES Religiosity</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS subscales 1-3, 5-6</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>FES Religiosity</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS subscales 1,4-6</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>RCAS Plead</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>RCAS Good Deeds</li> </ul>	<ul style="list-style-type: none"> <li>Hypothesis 5- supported</li> <li>Results in opposite direction of Hypothesis 4</li> </ul>	<ul style="list-style-type: none"> <li>Patient RCAS Plead</li> <li>Covariates of caregiver education, patient symptom severity</li> </ul>	<ul style="list-style-type: none"> <li>Hypothesis 5- supported</li> </ul>

\*Note: Higher scores on all significant predictor variables were predictive of an increased likelihood of premature family dropout

### Binary Logistic Regression

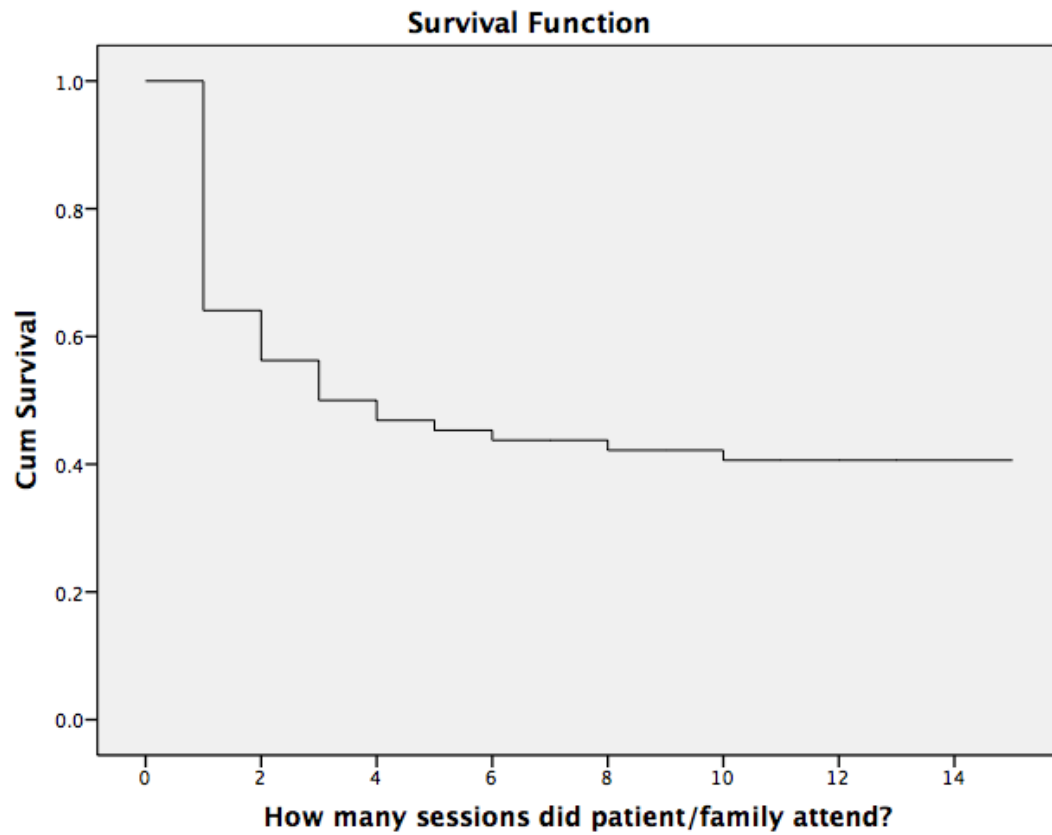
**Multiple Linear Regression**

**Table 13: Summary of Multiple Linear Regression Analyses**

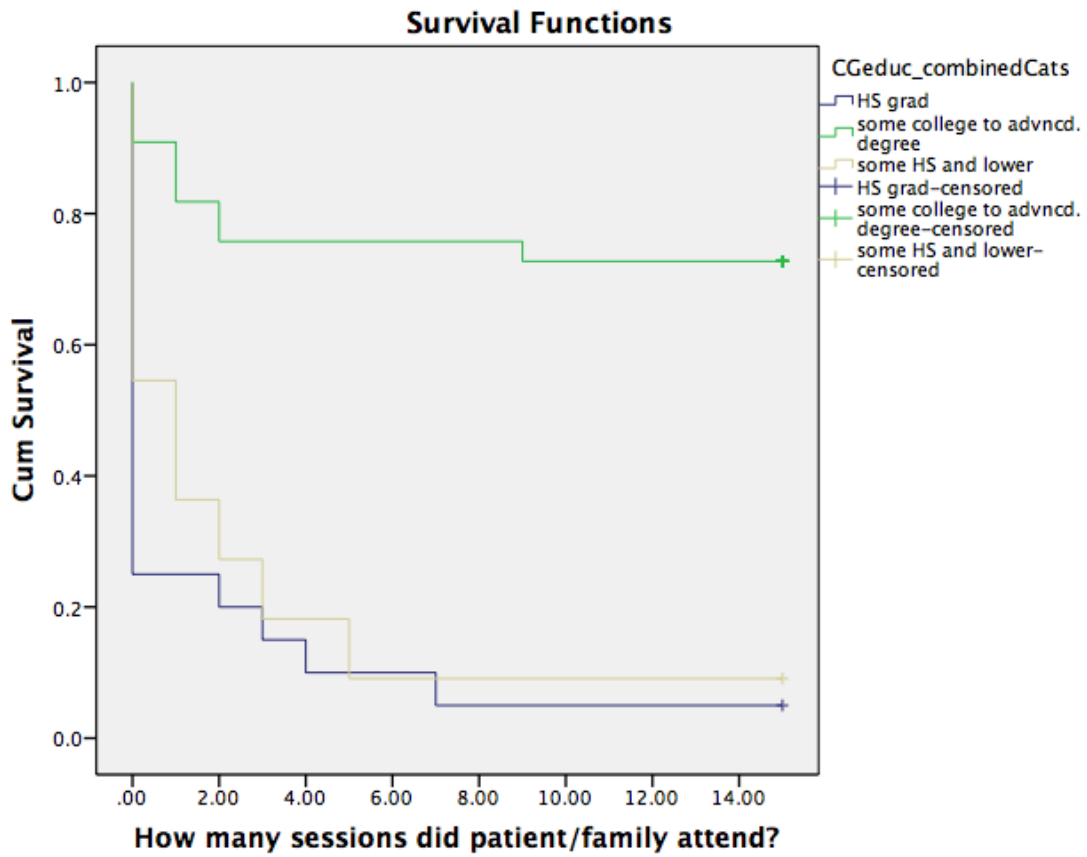
Sample	Covariates controlled for in Primary Analyses	Non-Significant Predictors	Significant Predictors of Number of Family Therapy Sessions Attended*	Study Hypotheses Supported?	Significant Predictors in Combined Model (covariates + primary study variables)	Study Hypotheses Supported?
CIT-S only, n = 64	<ul style="list-style-type: none"> <li>Age (caregivers)</li> <li>Ethnicity (patients &amp; caregivers)</li> <li>Education (caregivers)</li> <li>Symptom Severity (patients)</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS subscales 1-3, 6</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>FES Cohesion</li> <li>FES Religiosity</li> <li>SCS Interdependence</li> <li>SCS Independence</li> <li>RCAS subscales 1, 3, 5-6</li> </ul>	<b>Patient Variables</b> <ul style="list-style-type: none"> <li>FES Religiosity</li> <li>RCAS Interpersonal Religious Support</li> <li>RCAS Plead</li> </ul> <b>Caregiver Variables</b> <ul style="list-style-type: none"> <li>RCAS Good Deeds</li> <li>RCAS Interpersonal Religious Support</li> </ul>	<ul style="list-style-type: none"> <li>Hypothesis 5- supported</li> <li>Results in opposite direction of Hypothesis 4</li> </ul>	<ul style="list-style-type: none"> <li>Covariates of caregiver education, patient symptom severity</li> <li>Patient RCAS Plead</li> <li>Caregiver RCAS Interpersonal Religious Support</li> </ul>	<ul style="list-style-type: none"> <li>Hypothesis 5- supported</li> <li>Results in opposite direction of Hypothesis 4</li> </ul>

\*Note: *Higher* scores on all significant predictor variables were predictive of *fewer* family therapy sessions attended

Graph 1: Cumulative Proportion of Completer Families (CIT-S)

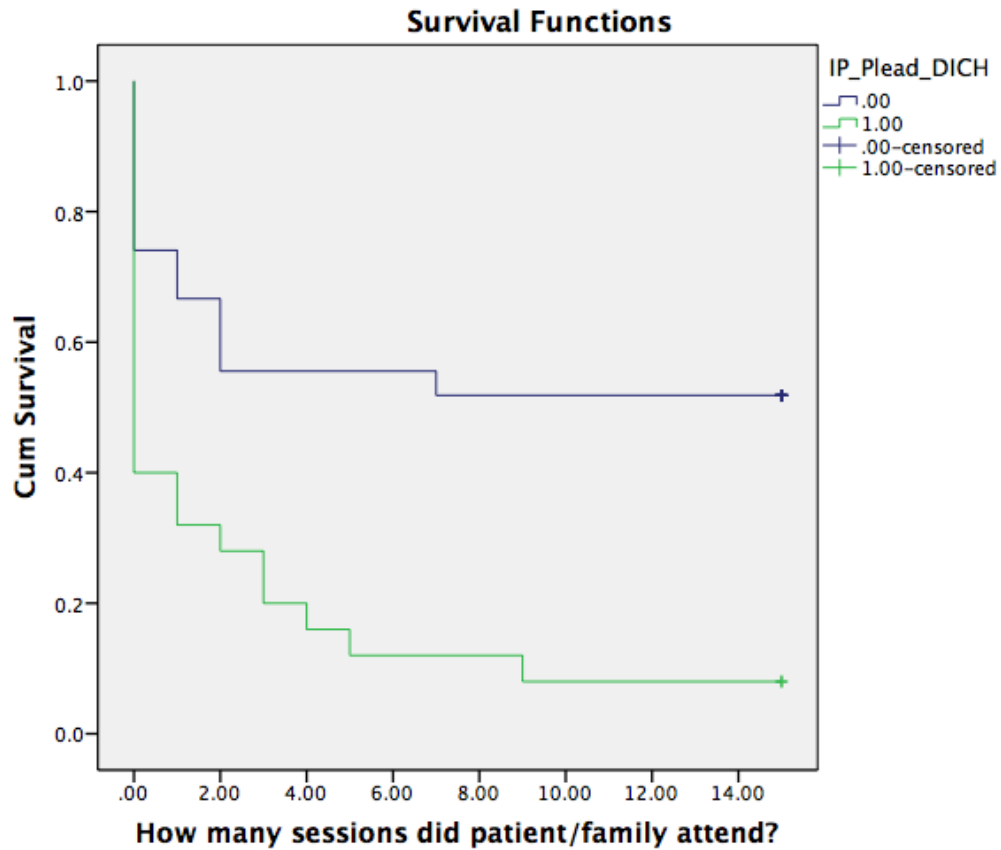


Graph 2: Cumulative Probability of Survival Based on Caregiver Education (CIT-S Families)

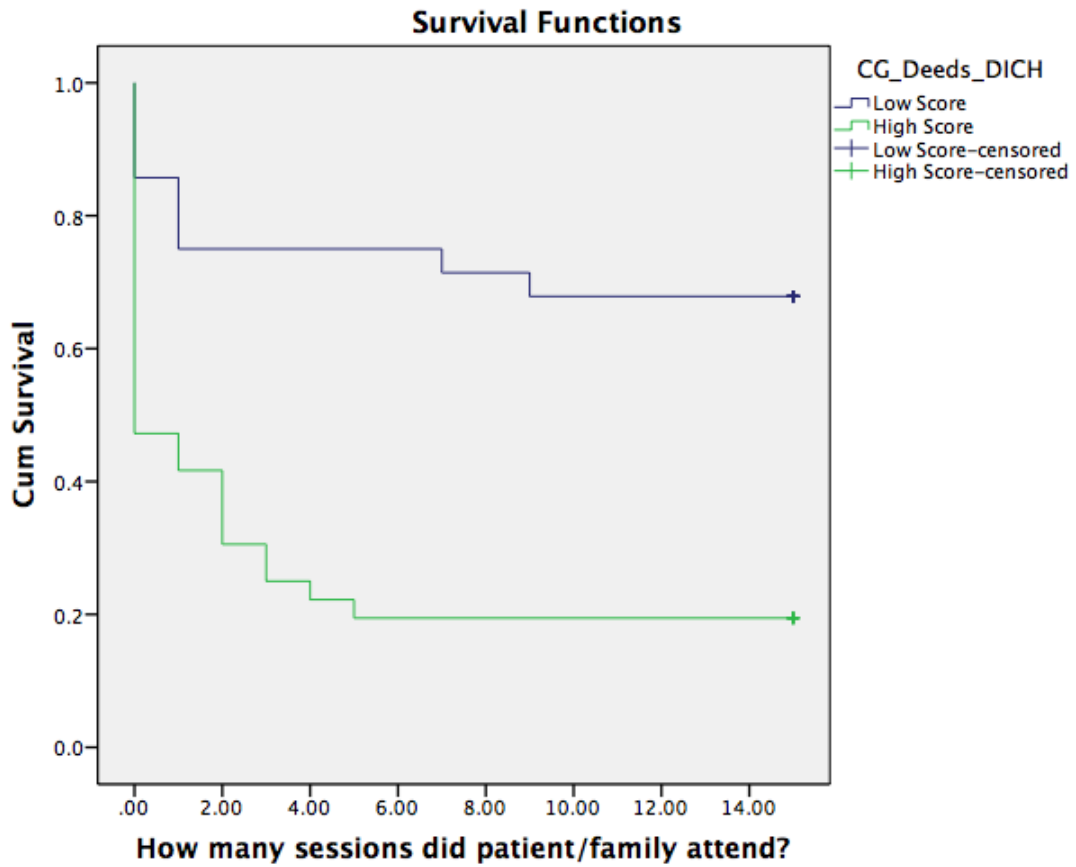




Graph 3: Cumulative Probability of Survival Based on Patient High versus Low RCAS Plead Scores (CIT-S Families) with “0”= Low scores and “1” = High scores



Graph 4: Cumulative Probability of Survival Based on Caregiver High versus Low RCAS Good Deeds Scores (CIT-S Families)



## Significant Results

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### **Binary Logistic Regression (CIT-S & PSY-ED COMBINED)**

#### *Caregiver RCAS Religious Avoidance*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(12) = 60.806, p < .001$ , -2 Log Likelihood = 57.202, explained 67.7% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 87.4% of cases. In step 2, the variable Caregiver RCAS Religious Avoidance was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 7.542, p = .479$ . The overall model was significant,  $\chi^2(13) = 65.396, p < .001$ , explained 71.2% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 85.1% of cases. Adding Caregiver RCAS Religious Avoidance to the model reduced -2 Log Likelihood to 52.612 (an improvement from 57.202), and indicated that Caregiver RCAS Religious Avoidance significantly contributed to the model ( $\chi^2(1) = 4.590, p = .032$ ) and was a significant predictor of attrition (Wald = 4.085, df=1,  $p = .043$ , B = .355, SE= .176, Odds Ratio or Exp (B) = 1.427, 95% CI for Exp (B) = 1.011 to 2.014). Results indicated that when controlling for other variables, families with caregivers who reported more religious avoidance were 1.427 times or 42.7% more likely to drop out of treatment prematurely when compared to families with caregivers who endorsed less religious avoidance (study hypothesis 5 supported).

#### *Caregiver RCAS Spiritual Based Coping*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(12) = 62.197, p < .001$ , -2 Log Likelihood = 57.560, explained 68.2% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 87.5% of cases. In step 2, the variable Caregiver RCAS Spiritual Based Coping was

added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 3.750, p = .879$ . The overall model was significant,  $\chi^2(13) = 70.585, p < .001$ , explained 74.2% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 86.4% of cases. Adding Caregiver RCAS Spiritual Based Coping to the model reduced -2 Log Likelihood to 49.173 (an improvement from 57.560), and indicated that Caregiver RCAS Spiritual Based Coping significantly contributed to the model ( $\chi^2(1) = 8.387, p = .004$ ) and was a significant predictor of attrition (Wald = 6.212, df = 1,  $p = .013$ , B = .131, SE = .053, Odds Ratio or Exp (B) = 1.140, 95% CI for Exp (B) = 1.028 to 1.264). Although in the opposite direction of study hypothesis 4, results indicated that when controlling for other variables, families with caregivers who reported more spiritual based coping were 1.140 times or 14% more likely to drop out of treatment prematurely when compared to families with caregivers who reported less spiritual based coping.

#### *Caregiver RCAS Good Deeds*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(12) = 62.189, p < .001$ , -2 Log Likelihood = 55.820, explained 68.8% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 87.4% of cases. In step 2, the variable Caregiver RCAS Good Deeds was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 7.437, p = .490$ . The overall model was significant,  $\chi^2(13) = 68.703, p < .001$ , explained 73.5% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 87.4% of cases. Adding Caregiver RCAS Good Deeds to the model reduced -2 Log Likelihood to 49.305 (an improvement from 55.820), and indicated that Caregiver RCAS Good Deeds significantly contributed to the model ( $\chi^2(1) = 6.514, p = .011$ ) and was a significant

predictor of attrition (Wald = 5.368,  $df=1$ ,  $p = .021$ ,  $B = .225$ ,  $SE= .097$ , Odds Ratio or  $\text{Exp}(B) = 1.252$ , 95% CI for  $\text{Exp}(B) = 1.035$  to  $1.515$ ). Although in the opposite direction of study hypothesis 4, results indicated that when controlling for other variables, families with caregivers who reported greater endorsement on the Good Deeds subscale were 1.252 times or 25.2% more likely to drop out of treatment prematurely when compared to families with caregivers who reported lower Good Deeds scores.

*Caregiver RCAS Interpersonal Religious Support*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(12) = 62.197$ ,  $p < .001$ , -2 Log Likelihood = 57.560, explained 68.2% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 87.5% of cases. In step 2, the variable Caregiver RCAS Interpersonal Religious Support was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 2.813$ ,  $p = .946$ . The overall model was significant,  $\chi^2(13) = 67.960$ ,  $p < .001$ , explained 72.4% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 86.4% of cases. Adding Caregiver RCAS Interpersonal Religious Support to the model reduced -2 Log Likelihood to 51.797 (an improvement from 57.560), and indicated that Caregiver RCAS Interpersonal Religious Support significantly contributed to the model ( $\chi^2(1) = 5.762$ ,  $p = .016$ ) and was a significant predictor of attrition (Wald = 4.987,  $df=1$ ,  $p = .026$ ,  $B = .368$ ,  $SE= .165$ , Odds Ratio or  $\text{Exp}(B) = 1.444$ , 95% CI for  $\text{Exp}(B) = 1.046$  to  $1.994$ ). Although in the opposite direction of study hypothesis 4, results indicated that when controlling for other variables, families with caregivers who reported having more interpersonal religious support were 1.444 times or 44.4% more

likely to drop out of treatment prematurely when compared to families with caregivers who reported having lower interpersonal religious support.

*Full model (covariates + significant primary variables)*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(12) = 60.782, p < .001$ , -2 Log Likelihood = 55.445, explained 68.4% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 87.2% of cases. In step 2, Caregiver RCAS Religious Avoidance, Caregiver RCAS Spiritual Based Coping, Caregiver RCAS Good Deeds, Caregiver RCAS Interpersonal Religious Support were added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 10.326, p = .243$ . The overall model was significant,  $\chi^2(16) = 72.400, p < .001$ , explained 76.8% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 88.4% of cases. Adding the variables to the model reduced -2 Log Likelihood to 43.827 (an improvement from 55.445), and indicated that the added variables significantly contributed to the model ( $\chi^2(4) = 11.618, p = .020$ ). However, none of the primary study variables were significant predictors of attrition (Caregiver RCAS Religious Avoidance  $B = .003, p = .989$ ; Caregiver RCAS Spiritual Based Coping  $B = .141, p = .116$ ; Caregiver RCAS Good Deeds  $B = -.090, p = .603$ ; Caregiver RCAS Interpersonal Religious Support  $B = .321, p = .243$ ).

An additional model was run to determine if only controlling for covariates that were significant predictors of family attrition status in the full model (caregiver gender, caregiver education, and patient psychiatric symptom severity) would change the relationships between the primary variables of interest and family attrition status. However, results remained unchanged in that caregiver gender, caregiver education, and

patient psychiatric symptom severity remained significant predictors of attrition whereas the primary study variables of interest (Caregiver RCAS Religious Avoidance, Caregiver RCAS Spiritual Based Coping, Caregiver RCAS Good Deeds, Caregiver RCAS Interpersonal Religious Support) were not.

### **Binary Logistic Regression (PSY-ED ONLY)**

#### *Patient SCS Independence*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(4) = 27.228, p < .001$ , -2 Log Likelihood = 25.346, explained 68.3% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.5% of cases. In step 2, the variable Patient SCS Independence was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 2.070, p = .979$ . The overall model was significant,  $\chi^2(5) = 35.142, p < .001$ , explained 80.5% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 92.1% of cases. Adding Patient SCS Independence to the model reduced -2 Log Likelihood to 17.432 (an improvement from 25.346), and indicated that Patient SCS Independence significantly contributed to the model ( $\chi^2(1) = 7.914, p = .005$ ) and was a significant predictor of attrition (Wald = 4.971, df=1,  $p = .026$ , B = -.125, SE = .056, Odds Ratio or Exp (B) = .883, 95% CI for Exp (B) = .791 to .985). Results indicated that when controlling for other variables, families with patients who had lower independence scores were more likely to remain in treatment when compared to families with patients who had higher independence scores (study hypothesis 2 supported).



### *Patient RCAS Religious Avoidance*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(4) = 28.661, p < .001$ , -2 Log Likelihood = 25.379, explained 69.4% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.7% of cases. In step 2, the variable Patient RCAS Religious Avoidance was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 1.721, p = .988$ . The overall model was significant,  $\chi^2(5) = 34.328, p < .001$ , explained 78.1% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.7% of cases. Adding Patient RCAS Religious Avoidance to the model reduced -2 Log Likelihood to 19.712 (an improvement from 25.379), and indicated that Patient RCAS Religious Avoidance significantly contributed to the model ( $\chi^2(1) = 5.667, p = .017$ ) and was a significant predictor of attrition (Wald = 3.873, df=1,  $p = .049$ , B = .600, SE = .305, Odds Ratio or Exp (B) = 1.822, 95% CI for Exp (B) = 1.002 to 3.313). Results indicated that when controlling for other variables, families with patients who had higher religious avoidance scores were 1.822 times or 82.2% more likely to drop out of treatment prematurely when compared to families with patients who had lower religious avoidance scores (study hypothesis 5 supported).

### *Caregiver FES Religiosity*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(4) = 28.661, p < .001$ , -2 Log Likelihood = 25.379, explained 69.4% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.7% of cases. In step 2, the variable Caregiver FES Religiosity was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 2.209, p$

= .974. The overall model was significant,  $\chi^2(5) = 36.547, p < .001$ , explained 81.1% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.7% of cases. Adding Caregiver FES Religiosity to the model reduced -2 Log Likelihood to 17.493 (an improvement from 25.379), and indicated that Caregiver FES Religiosity significantly contributed to the model ( $\chi^2(1) = 7.886, p = .005$ ) and was a significant predictor of attrition (Wald = 4.700, df=1,  $p = .030$ , B = .875, SE = .404, Odds Ratio or Exp (B) = 2.400, 95% CI for Exp (B) = 1.088 to 5.295). Although in the opposite direction of study hypothesis 4, results indicated that when controlling for other variables, families with caregivers who had higher religiosity scores were 2.4 times more likely to drop out of treatment prematurely when compared to families with caregivers who had lower religiosity scores.

#### *Caregiver RCAS Spiritual Based Coping*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(4) = 28.661, p < .001$ , -2 Log Likelihood = 25.379, explained 69.4% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.7% of cases. In step 2, the variable Caregiver RCAS Spiritual Based Coping was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 3.520, p = .898$ . The overall model was significant,  $\chi^2(5) = 35.726, p < .001$ , explained 80.0% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 89.7% of cases. Adding Caregiver RCAS Spiritual Based Coping to the model reduced -2 Log Likelihood to 18.314 (an improvement from 25.379), and indicated that Caregiver RCAS Spiritual Based Coping significantly contributed to the model ( $\chi^2(1) = 7.065, p = .008$ ) and was a significant predictor of attrition (Wald = 4.436, df=1,  $p = .035$ , B = .180,

SE= .085, Odds Ratio or Exp (B) = 1.197, 95% CI for Exp (B) = 1.013 to 1.415).

Although in the opposite direction of study hypothesis 4, results indicated that when controlling for other variables, families with caregivers who had higher spiritual based coping scores were 1.197 times or 19.7% more likely to drop out of treatment prematurely when compared to families with caregivers with lower spiritual based coping scores.

### **Binary Logistic Regression (CIT-S ONLY)**

#### *Patient RCAS Plead*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(3) = 33.793, p < .001$ , -2 Log Likelihood = 28.894, explained 68.8% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 82.0% of cases. In step 2, the variable Patient RCAS Plead was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 2.144, p = .976$ . The overall model was significant,  $\chi^2(4) = 43.665, p < .001$ , explained 81.5% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 94.0% of cases. Adding the variable Patient RCAS Plead to the model reduced -2 Log Likelihood to 19.022 (an improvement from 28.894), and indicated that Patient RCAS Plead significantly contributed to the model ( $\chi^2(1) = 9.872, p = .002$ ) and was a significant predictor of attrition (Wald = 5.251, df=1,  $p = .022$ , B = .718, SE = .313, Odds Ratio or Exp (B) = 2.051, 95% CI for Exp (B) = 1.110 to 3.791). Results indicated that when controlling for other variables, families with patients who had higher scores on RCAS subscale Plead were 2.051 times more likely to drop out of treatment prematurely when

compared to families with patients with lower Plead scores (study hypothesis 5 supported).

*Caregiver RCAS Good Deeds*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(3) = 36.891, p < .001$ , -2 Log Likelihood = 30.193, explained 70.1% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 82.7% of cases. In step 2, Caregiver RCAS Good Deeds was added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = 11.031, p = .200$ . The overall model was significant,  $\chi^2(4) = 46.114, p < .001$ , explained 81.1% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 96.2% of cases. Adding the variable Caregiver RCAS Good Deeds to the model reduced -2 Log Likelihood to 20.969 (an improvement from 30.193), and indicated that Caregiver RCAS Good Deeds significantly contributed to the model ( $\chi^2(1) = 9.223, p = .002$ ) and was a significant predictor of attrition (Wald = 4.713, df=1,  $p = .030$ , B = .371, SE = .171, Odds Ratio or Exp (B) = 1.449, 95% CI for Exp (B) = 1.037 to 2.025). Although in the opposite direction of study hypothesis 4, results indicated that when controlling for other variables, families with caregivers who had higher scores on the RCAS Good Deeds subscale were 1.449 times or 44.9% more likely to drop out of treatment prematurely when compared to families with caregivers with lower good deeds scores.

*Full model (covariates + significant primary variables), CIT-S only*

In step 1, covariates found to be significantly related to attrition were entered. The overall model was significant,  $\chi^2(3) = 33.793, p < .001$ , -2 Log Likelihood = 28.894, explained 68.8% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified

82.0% of cases. In step 2, Patient RCAS Plead and Caregiver RCAS Good Deeds were added. The Hosmer and Lemeshow goodness-of-fit test suggested that the model fit the data,  $\chi^2(8) = .390, p = .999$ . The overall model was significant,  $\chi^2(5) = 50.021, p < .001$ , explained 88.5% (Nagelkerke  $R^2$ ) of the variance in attrition, and correctly classified 92.0% of cases. Adding the variables to the model reduced -2 Log Likelihood to 12.666 (an improvement from 28.894), and indicated that the added variables significantly contributed to the model ( $\chi^2(2) = 16.228, p < .001$ ). Patient RCAS Plead remained a significant predictor of attrition (Wald = 4.060, df=1,  $p = .044$ , B = .709, SE = .352, Odds Ratio or Exp (B) = 2.032, 95% CI for Exp (B) = 1.020 to 4.051) with results indicating that families with patients who had higher scores on RCAS subscale Plead were 2.032 times more likely to drop out of treatment prematurely when compared to families with patients with lower Plead scores (study hypothesis 5 supported). Caregiver Good Deeds was not a significant predictor of attrition in this model (B = .450,  $p = .069$ ).

### **Hierarchical Multiple Linear Regression- CIT-S only (n= 64)**

#### *Patient RCAS Plead*

The linear combination of covariates only in step 1 was significantly related to and accounted for 49.8% of the variability in number of family therapy sessions attended,  $F(5,42) = 8.321, p < .001, R^2 = .498, R^2_{ADJUSTED} = .438$ . In step 2, Patient RCAS Plead was added and results indicated that this variable accounted for a significant proportion of variability in the number of sessions attended over and above the covariates ( $R^2_{CHANGE} = .063, F_{CHANGE}(1,41) = 5.853, p = .020$ ) with the overall model significant,  $F(6,41) = 8.711, p < .001, R^2 = .560, R^2_{ADJUSTED} = .496$ . Higher Patient RCAS Plead scores were

predictive of families attending fewer therapy sessions,  $t(41) = -2.419$ ,  $\beta = -.277$ , partial  $r = -.353$ ,  $p = .020$  (study hypothesis 5 supported).

#### *Patient FES Religiosity*

The linear combination of covariates only in step 1 was significantly related to and accounted for 47.9% of the variability in number of sessions attended,  $F(5,39) = 7.170$ ,  $p < .001$ ,  $R^2 = .479$ ,  $R^2_{\text{ADJUSTED}} = .412$ . In step 2, Patient FES Religiosity was added and results indicated that this variable accounted for a significant proportion of variability in the number of family therapy sessions attended over and above the covariates ( $R^2_{\text{CHANGE}} = .076$ ,  $F_{\text{CHANGE}}(1,38) = 6.536$ ,  $p = .015$ ) with the overall model significant,  $F(6,38) = 7.913$ ,  $p < .001$ ,  $R^2 = .555$ ,  $R^2_{\text{ADJUSTED}} = .485$ . Results were in the opposite direction of study hypothesis 4 as higher Patient FES Religiosity scores were predictive of families attending fewer therapy sessions,  $t(38) = -2.556$ ,  $\beta = -.283$ , partial  $r = -.383$ ,  $p = .015$ .

#### *Patient RCAS Interpersonal Religious Support*

The linear combination of covariates only in step 1 was significantly related to and accounted for 49.8% of the variability in number of sessions attended,  $F(5,42) = 8.321$ ,  $p < .001$ ,  $R^2 = .498$ ,  $R^2_{\text{ADJUSTED}} = .438$ . In step 2, Patient RCAS Interpersonal Religious Support was added and results indicated that this variable accounted for a significant proportion of variability in the number of family therapy sessions attended over and above the covariates ( $R^2_{\text{CHANGE}} = .048$ ,  $F_{\text{CHANGE}}(1,41) = 4.381$ ,  $p = .043$ ) with the overall model significant,  $F(6,41) = 8.222$ ,  $p < .001$ ,  $R^2 = .546$ ,  $R^2_{\text{ADJUSTED}} = .480$ . Results were in the opposite direction of study hypothesis 4 as higher Patient RCAS

Interpersonal Religious Support scores were predictive of families attending fewer therapy sessions,  $t(41) = -2.093$ ,  $\beta = -.238$ , partial  $r = -.311$ ,  $p = .043$ .

*Caregiver RCAS Good Deeds*

The linear combination of covariates only in step 1 was significantly related to and accounted for 50.1% of the variability in the number of therapy sessions attended,  $F(5,44) = 8.820$ ,  $p < .001$ ,  $R^2 = .501$ ,  $R^2_{ADJUSTED} = .444$ . In step 2, Caregiver RCAS Good Deeds was added and results indicated that this variable accounted for a significant proportion of variability in the number of sessions attended over and above the covariates ( $R^2_{CHANGE} = .061$ ,  $F_{CHANGE}(1,43) = 5.991$ ,  $p = .019$ ) with the overall model significant,  $F(6,43) = 9.182$ ,  $p < .001$ ,  $R^2 = .562$ ,  $R^2_{ADJUSTED} = .500$ . Results were in the opposite direction of study hypothesis 4 as higher Caregiver RCAS Good Deeds scores were predictive of families attending fewer therapy sessions,  $t(43) = -2.448$ ,  $\beta = -.266$ , partial  $r = -.350$ ,  $p = .019$ .

*Caregiver RCAS Interpersonal Religious Support*

The linear combination of covariates only in step 1 was significantly related to and accounted for 50.1% of the variability in the number of family therapy sessions attended,  $F(5,44) = 8.820$ ,  $p < .001$ ,  $R^2 = .501$ ,  $R^2_{ADJUSTED} = .444$ . In step 2, Caregiver RCAS Interpersonal Religious Support was added and results indicated that this variable accounted for a significant proportion of variability in the number of sessions attended over and above the covariates ( $R^2_{CHANGE} = .054$ ,  $F_{CHANGE}(1,43) = 5.184$ ,  $p = .028$ ) with the overall model significant,  $F(6,43) = 8.913$ ,  $p < .001$ ,  $R^2 = .554$ ,  $R^2_{ADJUSTED} = .492$ . Results were in the opposite direction of study hypothesis 4 as higher Caregiver RCAS

Interpersonal Religious Support scores were predictive of fewer family therapy sessions attended,  $t(43) = -2.277$ ,  $\beta = -.247$ , partial  $r = -.328$ ,  $p = .028$ .

*Full model (covariates + significant primary variables)*

The linear combination of covariates only in step 1 was significantly related to and accounted for 47.9% of the variability in the number of therapy sessions attended,  $F(5,39) = 7.170$ ,  $p < .001$ ,  $R^2 = .479$ ,  $R^2_{ADJUSTED} = .412$ . In step 2, significant primary study variables (Patient FES Religiosity, Patient RCAS Interpersonal Religious Support, Patient RCAS Plead, Caregiver RCAS Good Deeds, Caregiver RCAS Interpersonal Religious Support) were added and results indicated that the linear combination of the variables accounted for a significant proportion of variability in the number of sessions attended over and above the covariates ( $R^2_{CHANGE} = .294$ ,  $F_{CHANGE}(5,34) = 8.813$ ,  $p < .001$ ) with the overall model significant,  $F(10,34) = 11.583$ ,  $p < .001$ ,  $R^2 = .773$ ,  $R^2_{ADJUSTED} = .706$ . Study hypothesis 5 was supported as Patient RCAS Plead remained a significant predictor variable and indicated that higher patient plead scores were predictive of fewer family therapy sessions attended,  $t(34) = -4.378$ ,  $\beta = -.452$ , partial  $r = -.600$ ,  $p < .001$ . Results were in the opposite direction of study hypothesis 4 as higher Caregiver RCAS Interpersonal Religious Support scores continued to be predictive of fewer family therapy sessions attended,  $t(34) = -3.224$ ,  $\beta = -.410$ , partial  $r = -.484$ ,  $p = .003$ . The remaining primary study variables were not significant predictors of number of family therapy sessions attended (Patient FES Religiosity  $\beta = -.129$ ,  $p = .210$ ; Patient RCAS Interpersonal Religious Support  $\beta = .015$ ,  $p = .901$ ; Caregiver RCAS Good Deeds  $\beta = -.014$ ,  $p = .915$ ).



**Information on Covariates Found to be Significant Predictors of Family Attrition Status/Number of Therapy Sessions attended**

**Binary Logistic Regression- Full Sample (CIT-S & PSY-ED combined, n= 115)**

<i>Results for covariates + Caregiver RCAS Religious Avoidance</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-3.713	1.230	9.107	.003	.024	.002-.272
Caregiver gender	-2.424	1.127	4.628	.031	.089	.010-.806
Patient symptom severity	.127	.041	9.867	.002	1.136	1.049-1.230

<i>Results for covariates + Caregiver RCAS Spiritual Based Coping</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-4.243	1.312	10.452	.001	.014	.001-.188
Caregiver education (some high school or lower)	-.3024	1.444	4.383	.036	.049	.003-.824
Caregiver gender	-3.314	1.257	6.955	.008	.036	.003-.427
Patient symptom severity	.152	.047	10.517	.001	1.164	1.062-1.276

<i>Results for covariates + Caregiver RCAS Good Deeds</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-3.729	1.193	9.775	.002	.024	.002-.249
Caregiver gender	-3.034	1.277	5.646	.017	.048	.004-.588
Patient symptom severity	.150	.046	10.877	.001	1.162	1.063-1.271

<i>Results for covariates + Caregiver RCAS Interpersonal Religious Support</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-3.946	1.211	10.616	.001	.019	.002-.208
Caregiver gender	-2.362	1.127	4.391	.036	.094	.010-.858
Patient symptom severity	.128	.041	9.652	.002	1.137	1.049-1.233

<i>Results for covariates + significant predictors (full model)</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-4.746	1.544	9.442	.002	.009	.001-.179
Caregiver gender	-4.289	1.576	7.401	.007	.014	.001-.302
Patient symptom severity	.171	.055	9.823	.002	1.187	1.066-1.321

### Binary Logistic Regression- PSY-ED only (n= 51)

<i>Results for covariates + Patient SCS Independence</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient symptom severity	.266	.114	5.432	.020	1.305	1.043-1.633
<i>Results for covariates + Patient RCAS Religious Avoidance</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient symptom severity	.145	.068	4.562	.033	1.157	1.012-1.322
<i>Results for covariates + Caregiver FES Religiosity</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient symptom severity	.222	.094	5.530	.019	1.249	1.038-1.502
<i>Results for covariates + Caregiver RCAS Spiritual Based Coping</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient symptom severity	.182	.080	5.119	.024	1.199	1.025-1.404

### Binary Logistic Regression- CIT-S only, (n= 64)

<i>Results for covariates + Patient RCAS Plead</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-4.888	1.664	8.631	.003	.008	.001-.196
Patient symptom severity	.134	.063	4.526	.033	1.143	1.011-1.294

<i>Results for covariates + Caregiver RCAS Good Deeds</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-6.123	2.383	6.603	.010	.002	.001-.234
Patient symptom severity	.173	.087	3.954	.047	1.188	1.002-1.409

<i>Results for covariates + significant predictors (full model)</i>						
<b>Variable</b>	<b>B</b>	<b>SE (B)</b>	<b>Wald <math>\chi^2</math></b>	<b><i>p</i></b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver education (some college to advanced degree)	-7.529	3.495	4.642	.031	.001	.001-.507
Patient symptom severity	.234	.110	4.508	.034	1.264	1.018-1.568

### **Hierarchical Linear Regression- CIT-S only, (n= 64)**

<i>Results for covariates + Patient RCAS Plead</i>				
<b>Variable</b>	<b><math>\beta</math></b>	<b><i>t</i></b>	<b><i>p</i></b>	<b>Partial <i>r</i></b>
Caregiver education	.485	<i>t</i> (41) = 4.050	< .001	.535
Patient symptom severity	-.258	<i>t</i> (41) = -2.267	.029	-.334

<i>Results for covariates + Patient FES Religiosity</i>				
<b>Variable</b>	<b><math>\beta</math></b>	<b><i>t</i></b>	<b><i>p</i></b>	<b>Partial <i>r</i></b>
Caregiver education	.485	<i>t</i> (38) = 3.956	< .001	.540
Patient symptom severity	-.249	<i>t</i> (38) = -2.133	.039	-.327

<i>Results for covariates + Patient RCAS Interpersonal Religious Support</i>				
<b>Variable</b>	<b><math>\beta</math></b>	<b><i>t</i></b>	<b><i>p</i></b>	<b>Partial <i>r</i></b>
Caregiver education	.499	<i>t</i> (41) = 4.121	< .001	.541

<i>Results for covariates + Caregiver RCAS Good Deeds</i>				
<b>Variable</b>	<b><math>\beta</math></b>	<b><i>t</i></b>	<b><i>p</i></b>	<b>Partial <i>r</i></b>
Caregiver education	.480	<i>t</i> (43) = 4.073	< .001	.528
Patient symptom severity	-.227	<i>t</i> (43) = -2.060	.046	-.300

<i>Results for covariates + Caregiver RCAS Interpersonal Religious Support</i>				
<b>Variable</b>	<b><math>\beta</math></b>	<b><i>t</i></b>	<b><i>p</i></b>	<b>Partial <i>r</i></b>
Caregiver education	.522	<i>t</i> (43) = 4.520	< .001	.568

<i>Results for covariates + significant predictors (full model)</i>				
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver education	.253	$t(34) = 2.458$	.019	.388
Patient symptom severity	-.193	$t(34) = -2.067$	.046	-.334

## Non-Significant Results (Tables)

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### Binary Logistic Regression Non-Significant Results (CIT-S & PSY-ED Combined, n= 115)

<i>Results for covariates + Patient FES Family Cohesion</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.748, p = .564$			
	Step 2 overall model: $\chi^2(13) = 56.641, p < .001$			
	Contribution of added variable: $\chi^2(1) = .563, p = .453$			
	-2 Log Likelihood: 55.813			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 66.8%			
	% of correctly classified cases: 85.4%			
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient FES Family Cohesion	-.114	.456	-	-
Caregiver Education (some college to advanced degree)	-3.459	.003	.031	.003-.307
Patient Symptom Severity	.101	.007	1.106	1.028-1.191

<i>Results for covariates + Patient FES Religiosity</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.083, p = .850$			
	Step 2 model: $\chi^2(13) = 57.753, p < .001$			
	Contribution of added variable: $\chi^2(1) = 2.864, p = .091$			
	-2 Log Likelihood: 52.781			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 68.3%			
	% of correctly classified cases: 82.9%			
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient FES Religiosity	.380	.109	-	-
Caregiver Education (some college to advanced degree)	-3.643	.003	.026	.002-.294
Patient Symptom Severity	.134	.001	1.144	1.055-1.240

<i>Results for covariates + Patient SCS Interdependence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 5.413, p = .713$			
	Step 2 model: $\chi^2(13) = 57.875, p < .001$			
	Contribution of added variable: $\chi^2(1) = .015, p = .904$			
	-2 Log Likelihood: 56.229			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 67.0%			
	% of correctly classified cases: 86.9%			
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient SCS Interdependence	.003	.904	-	-
Caregiver Education (some college to advanced degree)	-3.455	.004	.032	.003-.328
Patient Symptom Severity	.111	.001	1.118	1.041-1.201

<i>Results for covariates + Patient SCS Independence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 3.653, p = .887$			
	Step 2 model: $\chi^2(13) = 60.572, p < .001$			
	Contribution of added variable: $\chi^2(1) = 3.182, p = .074$			
	-2 Log Likelihood: 53.532			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 69.2%			
	% of correctly classified cases: 85.7%			
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient SCS Independence	.003	.904	-	-
Caregiver Education (some college to advanced degree)	-3.841	.002	.021	.002-.256
Patient Symptom Severity	.129	.001	1.137	1.054-1.227

Caregiver Gender	-2.150	.046	.116	.014-.963
<i>Results for covariates + Patient RCAS Spiritual Based Coping</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 3.211, p = .920$			
	Step 2 model: $\chi^2(13) = 60.169, p < .001$			
	Contribution of added variable: $\chi^2(1) = .858, p = .354$			
	-2 Log Likelihood: 56.058			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 67.9%			
% of correctly classified cases: 84.9%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Spiritual Based Coping	.036	.364	-	-
Caregiver Education (some college to advanced degree)	-3.603	.002	.027	.003-.262
Patient Symptom Severity	.125	.001	1.133	1.051-1.223

<i>Results for covariates + Patient RCAS Good Deeds</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 2.232, p = .973$			
	Step 2 model: $\chi^2(13) = 60.761, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.450, p = .229$			
	-2 Log Likelihood: 55.466			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 68.4%			
% of correctly classified cases: 84.9%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Good Deeds	.094	.239	-	-
Caregiver Education (some college to advanced degree)	-3.399	.003	.033	.004-.310
Patient Symptom Severity	.121	.001	1.129	1.048-1.215

<i>Results for covariates + Patient RCAS Discontent</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 10.254, p = .248$			
	Step 2 model: $\chi^2(13) = 59.510, p < .001$			
	Contribution of added variable: $\chi^2(1) = .198, p = .656$			
	-2 Log Likelihood: 56.718			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 67.4%			
% of correctly classified cases: 87.2%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Discontent	-.064	.658	-	-
Caregiver Education (some college to advanced degree)	-3.650	.002	.026	.003-.269
Patient Symptom Severity	.119	.001	1.127	1.049-1.210
Caregiver Gender	-2.067	.049	.127	.016-.988

<i>Results for covariates + Patient RCAS Interpersonal Religious Support</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 1.841, p = .986$			
	Step 2 model: $\chi^2(13) = 60.542, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.230, p = .267$			
	-2 Log Likelihood: 55.686			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 68.2%			
% of correctly classified cases: 84.9%				

Variable	B	p	Odds Ratio	95% CI
Patient RCAS Interpersonal Religious Support	.205	.274	-	-
Caregiver Education (some college to advanced degree)	-3.361	.003	.035	.004-.326
Patient Symptom Severity	.114	.002	1.121	1.044-1.204

*Results for covariates + Patient RCAS Plead*

Model Statistics	
	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.591, p = .581$
	Step 2 model: $\chi^2(13) = 61.799, p < .001$
	Contribution of added variable: $\chi^2(1) = 2.488, p = .115$
	-2 Log Likelihood: 54.428
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 69.2%
	% of correctly classified cases: 84.9%

Variable	B	p	Odds Ratio	95% CI
Patient RCAS Plead	.221	.128	-	-
Caregiver Education (some college to advanced degree)	-3.073	.002	.046	.005-.466
Patient Symptom Severity	.121	.002	1.128	1.047-1.216

*Results for covariates + Patient RCAS Religious Avoidance*

Model Statistics	
	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.899, p = .768$
	Step 2 model: $\chi^2(13) = 60.351, p < .001$
	Contribution of added variable: $\chi^2(1) = .1040, p = .308$
	-2 Log Likelihood: 55.876
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 68.0%
	% of correctly classified cases: 84.9%

Variable	B	p	Odds Ratio	95% CI
Patient RCAS Religious Avoidance	.154	.316	-	-
Caregiver Education (some college to advanced degree)	-3.531	.002	.029	.003-.281
Patient Symptom Severity	.118	.001	1.126	1.048-1.210

*Results for covariates + Caregiver FES Family Cohesion*

Model Statistics	
	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.061, p = .852$
	Step 2 model: $\chi^2(13) = 61.336, p < .001$
	Contribution of added variable: $\chi^2(1) = .085, p = .771$
	-2 Log Likelihood: 57.322
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 68.0%
	% of correctly classified cases: 87.4%

Variable	B	p	Odds Ratio	95% CI
Caregiver FES Family Cohesion	.057	.772	-	-
Caregiver Education (some college to advanced degree)	-3.667	.002	.026	.003-.253
Patient Symptom Severity	.119	.001	1.127	1.047-1.212
Caregiver Gender	-2.176	.041	.113	.014-.916

*Results for covariates + Caregiver FES Religiosity*

Model Statistics	
	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.827, p = .555$
	Step 2 model: $\chi^2(13) = 65.093, p < .001$
	Contribution of added variable: $\chi^2(1) = 3.769, p = .052$
	-2 Log Likelihood: 53.565
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 70.8%



% of correctly classified cases: 83.9%				
Variable	B	p	Odds Ratio	95% CI
Caregiver FES Religiosity	.395	.070	-	-
Caregiver Education (some college to advanced degree)	-4.113	.002	.016	.001-.228
Patient Symptom Severity	.101	.001	1.155	1.060-1.257
Caregiver Gender	-2.478	.025	.084	.010-.736

<i>Results for covariates + Caregiver SCS Interdependence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 3.027, p = .933$			
	Step 2 model: $\chi^2(13) = 67.190, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.894, p = .169$			
	-2 Log Likelihood: 49.742			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 72.9%			
	% of correctly classified cases: 89.5%			
Variable	B	p	Odds Ratio	95% CI
Caregiver SCS Interdependence	.060	.182	-	-
Caregiver Education (some college to advanced degree)	-4.012	.002	.018	.001-.241
Patient Symptom Severity	.112	.003	1.119	1.038-1.206
Caregiver Gender	-2.707	.024	.067	.006-.703

<i>Results for covariates + Caregiver SCS Independence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.928, p = .544$			
	Step 2 model: $\chi^2(13) = 62.973, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.813, p = .178$			
	-2 Log Likelihood: 55.685			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 69.2%			
	% of correctly classified cases: 86.2%			
Variable	B	p	Odds Ratio	95% CI
Caregiver SCS Independence	.054	.191	-	-
Caregiver Education (some college to advanced degree)	-3.627	.002	.027	.003-.252
Patient Symptom Severity	.125	.002	1.133	1.048-1.224
Caregiver Gender	-2.214	.041	.109	.013-.916

<i>Results for covariates + Caregiver RCAS Discontent</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 8.820, p = .358$			
	Step 2 model: $\chi^2(13) = 62.670, p < .001$			
	Contribution of added variable: $\chi^2(1) = .038, p = .846$			
	-2 Log Likelihood: 55.988			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 69.0%			
	% of correctly classified cases: 88.5%			
Variable	B	p	Odds Ratio	95% CI
Caregiver RCAS Discontent	.034	.846	-	-
Caregiver Education (some college to advanced degree)	-3.867	.002	.021	.002-.228
Patient Symptom Severity	.116	.002	1.123	1.043-1.208
Caregiver Gender	-2.088	.048	.124	.016-.986

<i>Results for covariates + Caregiver RCAS Plead</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.422, p = .817$			

	Step 2 model: $\chi^2(13) = 62.273, p < .001$			
	Contribution of added variable: $\chi^2(1) = .076, p = .783$			
	-2 Log Likelihood: 57.484			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 68.2%			
	% of correctly classified cases: 85.2%			
Variable	B	p	Odds Ratio	95% CI
Caregiver RCAS Plead	.037	.783	-	-
Caregiver Education (some college to advanced degree)	-3.638	.002	.026	.003-.263
Patient Symptom Severity	.117	.002	1.124	1.045-1.208
Caregiver Gender	-2.151	.039	.116	.015-.893

### Binary Logistic Regression Non-Significant Results (PSY-ED Only, n =51)

<i>Results for covariates + Patient FES Family Cohesion</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 9.612, p = .293$			
	Step 2 model: $\chi^2(5) = 27.448, p < .001$			
	Contribution of added variable: $\chi^2(1) = .074, p = .786$			
	-2 Log Likelihood: 25.126			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 68.6%			
	% of correctly classified cases: 85.2%			
Variable	B	p	Odds Ratio	95% CI
Patient FES Family Cohesion	-.056	.785	-	-
Patient Symptom Severity	.154	.022	1.167	1.023-1.330

<i>Results for covariates + Patient FES Religiosity</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 8.204, p = .414$			
	Step 2 model: $\chi^2(5) = 29.580, p < .001$			
	Contribution of added variable: $\chi^2(1) = 2.006, p = .157$			
	-2 Log Likelihood: 23.100			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 72.1%			
	% of correctly classified cases: 92.1%			
Variable	B	p	Odds Ratio	95% CI
Patient FES Religiosity	.369	.188	-	-
Patient Symptom Severity	.153	.030	1.165	1.015-1.337

<i>Results for covariates + Patient SCS Interdependence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 5.433, p = .710$			
	Step 2 model: $\chi^2(5) = 30.151, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.490, p = .222$			
	-2 Log Likelihood: 23.889			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 71.8%			
	% of correctly classified cases: 87.2%			
Variable	B	p	Odds Ratio	95% CI
Patient SCS Interdependence	-.055	.237	-	-
Patient Symptom Severity	.207	.015	1.230	1.041-1.453

<i>Results for covariates + Patient RCAS Spiritual Based Coping</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.727, p = .566$			
	Step 2 model: $\chi^2(5) = 30.935, p < .001$			

	Contribution of added variable: $\chi^2(1) = 2.274, p = .132$			
	-2 Log Likelihood: 23.105			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 73.0%			
	% of correctly classified cases: 87.2%			
Variable	B	p	Odds Ratio	95% CI
Patient RCAS Spiritual Based Coping	.083	.158	-	-
Patient Symptom Severity	.161	.024	1.174	1.022-1.350

<i>Results for covariates + Patient RCAS Good Deeds</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.454, p = .814$			
	Step 2 model: $\chi^2(5) = 33.743, p < .001$			
	Contribution of added variable: $\chi^2(1) = 5.082, p = .024$			
	-2 Log Likelihood: 20.297			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 77.2%			
	% of correctly classified cases: 87.2%			
Variable	B	p	Odds Ratio	95% CI
Patient RCAS Good Deeds	.320	.067	-	-
Patient Symptom Severity	.182	.020	1.199	1.028-1.399

<i>Results for covariates + Patient RCAS Discontent</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 11.020, p = .201$			
	Step 2 model: $\chi^2(5) = 28.677, p < .001$			
	Contribution of added variable: $\chi^2(1) = .016, p = .900$			
	-2 Log Likelihood: 25.363			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 69.4%			
	% of correctly classified cases: 89.7%			
Variable	B	p	Odds Ratio	95% CI
Patient RCAS Discontent	-.021	.900	-	-
Patient Symptom Severity	.163	.015	1.177	1.032-1.342

<i>Results for covariates + Patient RCAS Interpersonal Religious Support</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.295, p = .614$			
	Step 2 model: $\chi^2(5) = 31.621, p < .001$			
	Contribution of added variable: $\chi^2(1) = 2.960, p = .085$			
	-2 Log Likelihood: 22.419			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 74.1%			
	% of correctly classified cases: 87.2%			
Variable	B	p	Odds Ratio	95% CI
Patient RCAS Interpersonal Religious Support	.536	.135	-	-
Patient Symptom Severity	.178	.014	1.195	1.036-1.377

<i>Results for covariates + Patient RCAS Plead</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 5.760, p = .674$			
	Step 2 model: $\chi^2(5) = 29.597, p < .001$			
	Contribution of added variable: $\chi^2(1) = .936, p = .333$			
	-2 Log Likelihood: 24.443			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 70.9%			
	% of correctly classified cases: 89.7%			

Variable	B	p	Odds Ratio	95% CI
Patient RCAS Plead	.173	.349	-	-
Patient Symptom Severity	.146	.035	1.158	1.010-1.327
<i>Results for covariates + Caregiver FES Family Cohesion</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 8.972, p = .360$			
	Step 2 model: $\chi^2(5) = 28.844, p < .001$			
	Contribution of added variable: $\chi^2(1) = .183, p = .669$			
	-2 Log Likelihood: 25.196			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 69.7%			
% of correctly classified cases: 87.2%				
Variable	B	p	Odds Ratio	95% CI
Caregiver FES Family Cohesion	-.116	.670	-	-
Patient Symptom Severity	.160	.014	1.173	1.033-1.333

<i>Results for covariates + Caregiver SCS Interdependence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 7.796, p = .454$			
	Step 2 model: $\chi^2(5) = 28.407, p < .001$			
	Contribution of added variable: $\chi^2(1) = .001, p = .987$			
	-2 Log Likelihood: 24.273			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 70.2%			
% of correctly classified cases: 89.5%				
Variable	B	p	Odds Ratio	95% CI
Caregiver SCS Interdependence	-.001	.987	-	-
Patient Symptom Severity	.160	.018	1.173	1.028-1.340

<i>Results for covariates + Caregiver SCS Independence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 10.973, p = .203$			
	Step 2 model: $\chi^2(5) = 28.772, p < .001$			
	Contribution of added variable: $\chi^2(1) = .061, p = .805$			
	-2 Log Likelihood: 25.318			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 69.5%			
% of correctly classified cases: 89.7%				
Variable	B	p	Odds Ratio	95% CI
Caregiver SCS Independence	.013	.805	-	-
Patient Symptom Severity	.163	.015	1.177	1.032-1.343

<i>Results for covariates + Caregiver RCAS Good Deeds</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 15.608, p = .048^*$			

\*As the model did not fit the data, the rest of the model was not interpreted.

<i>Results for covariates + Caregiver RCAS Discontent</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 8.640, p = .374$			
	Step 2 model: $\chi^2(5) = 27.677, p < .001$			
	Contribution of added variable: $\chi^2(1) = .007, p = .934$			
	-2 Log Likelihood: 24.897			
	% of variance in attrition explained (Nagelkerke R <sup>2</sup> ): 69.0%			
% of correctly classified cases: 89.5%				
Variable	B	p	Odds Ratio	95% CI
Caregiver RCAS Discontent	-.019	.934	-	-

Patient Symptom Severity	.162	.014	1.176	1.034-1.337
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<i>Results for covariates + Caregiver RCAS Interpersonal Religious Support</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 13.233, p = .104$			
	Step 2 model: $\chi^2(5) = 29.513, p < .001$			
	Contribution of added variable: $\chi^2(1) = .852, p = .356$			
	-2 Log Likelihood: 24.527			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 70.8%			
% of correctly classified cases: 87.2%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Interpersonal Religious Support	.197	.368	-	-
Patient Symptom Severity	.163	.018	1.177	1.028-1.348

<i>Results for covariates + Caregiver RCAS Plead</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 5.970, p = .651$			
	Step 2 model: $\chi^2(5) = 28.992, p < .001$			
	Contribution of added variable: $\chi^2(1) = .331, p = .565$			
	-2 Log Likelihood: 25.048			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 69.9%			
% of correctly classified cases: 89.7%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Plead	-.127	.569	-	-
Patient Symptom Severity	.174	.015	1.190	1.034-1.369

<i>Results for covariates + Caregiver RCAS Religious Avoidance</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.359, p = .823$			
	Step 2 model: $\chi^2(5) = 29.355, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.885, p = .170$			
	-2 Log Likelihood: 23.324			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 71.8%			
% of correctly classified cases: 92.1%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Religious Avoidance	.283	.196	-	-
Patient Symptom Severity	.151	.031	1.163	1.014-1.333

### Binary Logistic Regression Non-Significant Results (CIT-S Only, n =64)

<i>Results for covariates + Patient FES Family Cohesion</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 5.022, p = .657$			
	Step 2 model: $\chi^2(4) = 38.529, p < .001$			
	Contribution of added variable: $\chi^2(1) = 4.593, p = .032$			
	-2 Log Likelihood: 22.983			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 76.7%			
% of correctly classified cases: 89.4%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient FES Family Cohesion	-.492	.063	-	-
Caregiver Education (some college to advanced degree)	-4.849	.002	.008	.001-.159

<i>Results for covariates + Patient FES Religiosity</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 1.236, p = .990$			
	Step 2 model: $\chi^2(4) = 33.264, p < .001$			
	Contribution of added variable: $\chi^2(1) = 3.022, p = .082$			
	-2 Log Likelihood: 25.601			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 71.0%			
% of correctly classified cases: 87.2%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient FES Religiosity	.381	.096	-	-
Caregiver Education (some college to advanced degree)	-4.034	.003	.018	.001-.265
Patient Symptom Severity	.151	.031	1.163	1.014-1.333

<i>Results for covariates + Patient SCS Interdependence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 2.332, p = .969$			
	Step 2 model: $\chi^2(4) = 34.491, p < .001$			
	Contribution of added variable: $\chi^2(1) = .462, p = .497$			
	-2 Log Likelihood: 26.614			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 71.2%			
% of correctly classified cases: 87.5%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient SCS Interdependence	.030	.518	-	-
Caregiver Education (some college to advanced degree)	-4.330	.001	.013	.001-.166

<i>Results for covariates + Patient SCS Independence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.116, p = .634$			
	Step 2 model: $\chi^2(4) = 37.026, p < .001$			
	Contribution of added variable: $\chi^2(1) = 3.886, p = .049$			
	-2 Log Likelihood: 24.880			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 73.9%			
% of correctly classified cases: 85.7%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient SCS Independence	.085	.074	-	-
Caregiver Education (some college to advanced degree)	-5.556	.005	.004	.001-.183

<i>Results for covariates + Patient RCAS Spiritual Based Coping</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.989, p = .759$			
	Step 2 model: $\chi^2(4) = 38.023, p < .001$			
	Contribution of added variable: $\chi^2(1) = 4.231, p = .040$			
	-2 Log Likelihood: 24.664			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 74.5%			
% of correctly classified cases: 88.0%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Spiritual Based Coping	.100	.063	-	-
Caregiver Education (some college to advanced degree)	-4.777	.002	.008	.001-.178
Patient Symptom Severity	.110	.029	1.116	1.011-1.232

<i>Results for covariates + Patient RCAS Good Deeds</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.586, p = .801$			
	Step 2 model: $\chi^2(4) = 38.276, p < .001$			
	Contribution of added variable: $\chi^2(1) = 4.483, p = .034$			
	-2 Log Likelihood: 24.411			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 74.9%			
% of correctly classified cases: 88.0%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Good Deeds	.207	.065	-	-
Caregiver Education (some college to advanced degree)	-4.657	.001	.009	.001-.166
Patient Symptom Severity	.094	.043	1.099	1.003-1.204

<i>Results for covariates + Patient RCAS Discontent</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 9.863, p = .275$			
	Step 2 model: $\chi^2(4) = 33.824, p < .001$			
	Contribution of added variable: $\chi^2(1) = .031, p = .860$			
	-2 Log Likelihood: 28.863			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 68.8%			
% of correctly classified cases: 82.0%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Discontent	-.046	.860	-	-
Caregiver Education (some college to advanced degree)	-4.241	.001	.014	.001-.173

<i>Results for covariates + Patient RCAS Interpersonal Religious Support</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 2.297, p = .971$			
	Step 2 model: $\chi^2(4) = 36.657, p < .001$			
	Contribution of added variable: $\chi^2(1) = 2.865, p = .091$			
	-2 Log Likelihood: 26.030			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 72.7%			
% of correctly classified cases: 88.0%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Interpersonal Religious Support	.390	.116	-	-
Caregiver Education (some college to advanced degree)	-4.118	.001	.016	.001-.204

<i>Results for covariates + Patient RCAS Religious Avoidance</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.189, p = .626$			
	Step 2 model: $\chi^2(4) = 37.546, p < .001$			
	Contribution of added variable: $\chi^2(1) = 3.753, p = .053$			
	-2 Log Likelihood: 25.141			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 73.9%			
% of correctly classified cases: 86.0%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Patient RCAS Religious Avoidance	.497	.092	-	-
Caregiver Education (some college to advanced degree)	-5.530	.005	.004	.001-.193
Patient Symptom Severity	.129	.032	1.138	1.011-1.281

<i>Results for covariates + Caregiver FES Family Cohesion</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.445, p = .815$			
	Step 2 model: $\chi^2(4) = 36.074, p < .001$			
	Contribution of added variable: $\chi^2(1) = .010, p = .921$			
	-2 Log Likelihood: 30.149			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 69.7%			
% of correctly classified cases: 82.4%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver FES Family Cohesion	.024	.921	-	-
Caregiver Education (some college to advanced degree)	-4.370	.003	.013	.001-.152

<i>Results for covariates + Caregiver FES Religiosity</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.549, p = .586$			
	Step 2 model: $\chi^2(4) = 37.366, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.233, p = .267$			
	-2 Log Likelihood: 28.857			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 71.4%			
% of correctly classified cases: 86.3%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver FES Religiosity	.264	.276	-	-
Caregiver Education (some college to advanced degree)	-4.421	.001	.012	.001-.160

<i>Results for covariates + Caregiver SCS Interdependence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 4.445, p = .815$			
	Step 2 model: $\chi^2(4) = 36.074, p < .001$			
	Contribution of added variable: $\chi^2(1) = .452, p = .501$			
	-2 Log Likelihood: 30.149			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 69.7%			
% of correctly classified cases: 82.4%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver SCS Interdependence	.033	.507	-	-
Caregiver Education (some college to advanced degree)	-4.188	.001	.015	.001-.180

<i>Results for covariates + Caregiver SCS Independence</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 15.794, p = .045^*$			

\*As the model did not fit the data, the rest of the model was not interpreted.

<i>Results for covariates + Caregiver RCAS Spiritual Based Coping</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 6.623, p = .578$			
	Step 2 model: $\chi^2(4) = 38.531, p < .001$			
	Contribution of added variable: $\chi^2(1) = 1.641, p = .200$			
	-2 Log Likelihood: 28.552			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 72.2%			
% of correctly classified cases: 88.5%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Spiritual Based Coping	.058	.215	-	-
Caregiver Education (some college to advanced degree)	-4.295	.001	.014	.001-.180



<i>Results for covariates + Caregiver RCAS Discontent</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 5.607, p = .691$			
	Step 2 model: $\chi^2(4) = 37.571, p < .001$			
	Contribution of added variable: $\chi^2(1) = .681, p = .409$			
	-2 Log Likelihood: 29.512			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 71.0%			
% of correctly classified cases: 90.4%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Discontent	.681	.409	-	-
Caregiver Education (some college to advanced degree)	-4.442	.001	.012	.001-.144

<i>Results for covariates + Caregiver RCAS Interpersonal Religious Support</i>	
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 30.978, p < .001^*$

\*As the model did not fit the data, the rest of the model was not interpreted.

<i>Results for covariates + Caregiver RCAS Plead</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 7.531, p = .481$			
	Step 2 model: $\chi^2(4) = 37.472, p < .001$			
	Contribution of added variable: $\chi^2(1) = .581, p = .446$			
	-2 Log Likelihood: 29.612			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 70.9%			
% of correctly classified cases: 88.5%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Plead	.123	.453	-	-
Caregiver Education (some college to advanced degree)	-4.303	.001	.014	.001-.163

<i>Results for covariates + Caregiver RCAS Religious Avoidance</i>				
<b>Model Statistics</b>	Hosmer and Lemeshow goodness-of-fit: $\chi^2(8) = 11.977, p = .152$			
	Step 2 model: $\chi^2(4) = 41.188, p < .001$			
	Contribution of added variable: $\chi^2(1) = 4.298, p = .038$			
	-2 Log Likelihood: 25.895			
	% of variance in attrition explained (Nagelkerke $R^2$ ): 75.5%			
% of correctly classified cases: 92.3%				
<b>Variable</b>	<b>B</b>	<b>p</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Caregiver RCAS Religious Avoidance	.468	.073	-	-
Caregiver Education (some college to advanced degree)	-4.275	.003	.014	.001-.225
Patient Symptom Severity	.101	.043	1.106	1.003-1.219

#### Multiple Linear Regression Non-Significant Results (CIT-S Only, n=64)

<i>Results for covariates + Patient FES Family Cohesion</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .020, F_{\text{CHANGE}}(1,38) = 1.742, p = .195$			
	$F(6,38) = 7.839, p < .001, R^2 = .533, R^2_{\text{ADJUSTED}} = .483$			
<b>Variable</b>	<b><math>\beta</math></b>	<b>t</b>	<b>p</b>	<b>Partial r</b>
Patient FES Family Cohesion	.154	$t(38) = 1.320$	.195	-
Caregiver Education	.543	$t(38) = 4.305$	< .001	.573

<i>Results for covariates + Patient SCS Interdependence</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .003, F_{\text{CHANGE}}(1,39) = .206, p = .653$			
	$F(6,39) = 7.172, p < .001, R^2 = .525, R^2_{\text{ADJUSTED}} = .451$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Patient SCS Interdependence	-.051	$t(39) = -.454$	.653	-
Caregiver Education	.559	$t(39) = 4.458$	< .001	.581

<i>Results for covariates + Patient SCS Independence</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .022, F_{\text{CHANGE}}(1,40) = 1.874, p = .179$			
	$F(6,40) = 7.335, p < .001, R^2 = .524, R^2_{\text{ADJUSTED}} = .452$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Patient SCS Independence	-.152	$t(40) = -1.369$	.179	-
Caregiver Education	.558	$t(40) = 4.517$	< .001	.581

<i>Results for covariates + Patient RCAS Spiritual Based Coping</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .013, F_{\text{CHANGE}}(1,41) = 1.132, p = .294$			
	$F(6,41) = 7.145, p < .001, R^2 = .511, R^2_{\text{ADJUSTED}} = .440$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Patient RCAS Spiritual Based Coping	-.128	$t(41) = -1.064$	.294	-
Caregiver Education	.527	$t(41) = 4.195$	< .001	.548

<i>Results for covariates + Patient RCAS Good Deeds</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .040, F_{\text{CHANGE}}(1,41) = 3.591, p = .065$			
	$F(6,41) = 7.960, p < .001, R^2 = .538, R^2_{\text{ADJUSTED}} = .470$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Patient RCAS Good Deeds	-.216	$t(41) = -1.895$	.065	-
Caregiver Education	.528	$t(41) = 4.407$	< .001	.567

<i>Results for covariates + Patient RCAS Discontent</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .004, F_{\text{CHANGE}}(1,41) = .324, p = .573$			
	$F(6,41) = 6.876, p < .001, R^2 = .502, R^2_{\text{ADJUSTED}} = .429$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Patient RCAS Discontent	.068	$t(41) = .569$	.573	-
Caregiver Education	.567	$t(41) = 4.569$	< .001	.581

<i>Results for covariates + Patient RCAS Religious Avoidance</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .005, F_{\text{CHANGE}}(1,41) = .441, p = .511$			
	$F(6,41) = 6.915, p < .001, R^2 = .503, R^2_{\text{ADJUSTED}} = .430$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Patient RCAS Religious Avoidance	-.077	$t(41) = -.664$	.511	-
Caregiver Education	.547	$t(41) = 4.407$	< .001	.657

<i>Results for covariates + Caregiver FES Family Cohesion</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .001, F_{\text{CHANGE}}(1,42) = .006, p = .938$			
	$F(6,42) = 6.805, p < .001, R^2 = .493, R^2_{\text{ADJUSTED}} = .420$			
<b>Variable</b>	$\beta$	$t$	$p$	<b>Partial <math>r</math></b>
Caregiver FES Family Cohesion	-.009	$t(42) = -.079$	.938	-
Caregiver Education	.555	$t(42) = 4.500$	< .001	.570

<i>Results for covariates + Caregiver FES Religiosity</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .002, F_{\text{CHANGE}}(1,42) = .198, p = .659$			
	$F(6,42) = 7.073, p < .001, R^2 = .503, R^2_{\text{ADJUSTED}} = .432$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver FES Religiosity	-.051	$t(42) = -.445$	.659	-
Caregiver Education	.547	$t(42) = 4.366$	< .001	.559

<i>Results for covariates + Caregiver SCS Interdependence</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .002, F_{\text{CHANGE}}(1,42) = .201, p = .657$			
	$F(6,42) = 6.963, p < .001, R^2 = .499, R^2_{\text{ADJUSTED}} = .427$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver SCS Interdependence	-.054	$t(42) = -.448$	.657	-
Caregiver Education	.536	$t(42) = 4.209$	< .001	.545

<i>Results for covariates + Caregiver SCS Independence</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .036, F_{\text{CHANGE}}(1,42) = 3.344, p = .075$			
	$F(6,42) = 8.394, p < .001, R^2 = .545, R^2_{\text{ADJUSTED}} = .480$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver SCS Independence	-.197	$t(42) = -1.829$	.075	-
Caregiver Education	.567	$t(42) = 4.844$	< .001	.599

<i>Results for covariates + Caregiver RCAS Spiritual Based Coping</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .012, F_{\text{CHANGE}}(1,43) = 1.048, p = .312$			
	$F(6,43) = 7.533, p < .001, R^2 = .512, R^2_{\text{ADJUSTED}} = .444$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver RCAS Spiritual Based Coping	-.118	$t(43) = -1.024$	.312	-
Caregiver Education	.516	$t(43) = 4.062$	< .001	.527

<i>Results for covariates + Caregiver RCAS Discontent</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .010, F_{\text{CHANGE}}(1,43) = .905, p = .347$			
	$F(6,43) = 7.485, p < .001, R^2 = .511, R^2_{\text{ADJUSTED}} = .443$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver RCAS Discontent	-.103	$t(43) = -.951$	.347	-
Caregiver Education	.562	$t(43) = 4.693$	< .001	.582

<i>Results for covariates + Caregiver RCAS Plead</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .014, F_{\text{CHANGE}}(1,43) = 1.254, p = .269$			
	$F(6,43) = 7.601, p < .001, R^2 = .515, R^2_{\text{ADJUSTED}} = .447$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver RCAS Plead	-.132	$t(43) = -1.120$	.269	-
Caregiver Education	.524	$t(43) = 4.246$	< .001	.543

<i>Results for covariates + Caregiver RCAS Religious Avoidance</i>				
<b>Model Statistics (step 2)</b>	$R^2_{\text{CHANGE}} = .022, F_{\text{CHANGE}}(1,43) = 2.013, p = .163$			
	$F(6,43) = 7.855, p < .001, R^2 = .523, R^2_{\text{ADJUSTED}} = .456$			
<b>Variable</b>	<b><math>\beta</math></b>	<b><math>t</math></b>	<b><math>p</math></b>	<b>Partial <math>r</math></b>
Caregiver RCAS Religious Avoidance	-.175	$t(43) = -1.419$	.163	-
Caregiver Education	.471	$t(43) = 3.519$	.001	.473