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ATTRITION IN A TELEPHONIC INTERVENTION PROGRAM FOR DEPRESSED,
LOW-INCOME PATIENTS IN A PRIMARY CARE SETTING

A Dissertation

Presented to

the Faculty of the Morgridge College of Education

University of Denver

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Benjamin C. Salazar

August 2013

Advisor: Jesse N. Valdez

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Abstract

Telemental health interventions are currently being implemented in primary care settings in order to reduce the cost of providing treatment and increase access to services of underserved groups. Studies of the efficacy of telemental health interventions have generally demonstrated high rates of attrition. Eysenbach (2005) suggested that the reality of high attrition rates in telemental health studies prompts further investigation into the factors related to attrition. Such research should focus on identifying the characteristics of clients who drop out of treatment and at what points such clients are likely to drop out. The purpose of this study was to identify client characteristics associated with dropout from a telemental health intervention for depressed primary care patients. Clients who dropped out at different time points during the intervention were compared to determine whether they differed demographically or on certain baseline characteristics, including severity of depression, self-efficacy, acculturation, treatment expectancy, and co-morbid mental illness. In addition, differences in attrition rates between therapists were examined to determine whether observable therapist characteristics impacted retention in telemental health treatment. Results suggested that participant age and baseline depression scores, therapist age, and changes in participant depression scores over time were significant predictors of attrition from the intervention. Implications and comparisons of attrition in telemental health and traditional psychotherapy interventions are discussed.

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Chapter One

In recent years, telemental health interventions for the treatment of depression have received increased attention as they have become more widely implemented in primary care settings (Maheu, Pulier, Wilhelm, McMEnamin, & Brown-Connelly, 2005). Such interventions are utilized to overcome barriers to receiving mental health treatment (Mohr, 2009) and to reduce the cost of treatment (Gilbody, Whitty, Grimshaw, & Thomas, 2003). While recent research has demonstrated the efficacy of telemental health interventions in treating depression (Hailey, Roine, & Ohinmaa, 2008), a substantial proportion of those who engage in such interventions do not complete treatment (Eysenbach, 2005; Mohr, Vella, Hart, Heckman, & Simon, 2008; Lynch, Tamburrino, Nagel, & Smith, 2004).

Research investigating the causes of attrition in traditional psychotherapy for depressed clients has revealed a number of important factors that predict attrition. Factors such as ethnicity (Arnold et al., 2007), acculturation (Miranda, Andujo, Caballero, Guerrero, & Ramos, 1976), income level (Warden et al., 2009), age and gender (Pinto-Meza et al., 2011), higher baseline severity of depressive symptoms (Hopko, Robertson, & Colman, 2008), and comorbid anxiety (Arnold et al., 2007; Herman et al., 2002) have all been found to significantly predict treatment dropout in face-to-face psychotherapy, specifically in depressed clients. Additionally, clients who have lower levels of perceived

self-efficacy have demonstrated higher dropout rates from outpatient treatment than those with high self-efficacy (Longo, Lent, & Brown, 1992).

Relatively few studies have examined the issue of attrition in telemental health interventions (Eysenbach, 2005; Mohr, Vella, Hart, Heckman, & Simon, 2008). Due to the significant differences in the delivery and content of such interventions versus traditional psychotherapy, it is reasonable that the factors that predict attrition in telemental health may also differ from those that predict attrition in traditional psychotherapy. Such differences in predictors of attrition between face-to-face and telemental health interventions might indicate how telemental health interventions overcome barriers to treatment. Eysenbach (2005) argues for the need to develop a “science of attrition” for telemental health interventions, denoting the need to better understand why and when patients drop out of telemental health treatment, given the large number of patients who often drop out of these interventions. Eysenbach suggests that those who conduct telemental health research often either “gloss over” high attrition rates or see their study as a failure due to high attrition. He states that rather than view attrition as an inconvenience and limitation of current research, investigators should begin to explore attrition in greater depth, as high attrition rates are a natural part of telemental health research (Eysenbach, 2005).

In addition to obtaining a greater understanding of the issue of attrition in telemental health research, Mohr (2009) suggests that there is a need to better understand how telemental health interventions may address some of the barriers that exist in traditional psychotherapy. While many telemental health interventions have shown promise in treating various conditions (Hailey, Roine, & Ohinmaa, 2008), not everyone

who engages in such interventions will benefit, which may contribute to attrition. It is important to gain a better understanding of how and for whom telemental health interventions work most effectively so that they can be implemented appropriately (Minami, 2008).

This study proposes to explore the issue of attrition in a telemental health intervention for depressed patients. The primary aim of the study was to identify factors that predict dropout from the intervention and assess when attrition occurs for various groups of participants. The research questions that this study aims to answer include the following:

1. What patient characteristics are associated with dropout (and retention) in telemental health treatment of depression?
2. Do therapist characteristics predict attrition in telehealth interventions?
3. Do people who drop out of the telemental health intervention differ in meaningful ways?
4. Do factors that predict attrition in telemental health differ from those identified in the literature for traditional psychotherapy?

This study explored attrition rates in a diverse sample of participants who were receiving telemental health treatment for depression from a large, primary care hospital. The variables that were examined in this study included ethnicity and acculturation, age, gender, severity of depressive symptoms, self-efficacy, and comorbidity of mental illness. Data for this study came from low-income patients at a large healthcare organization in the intermountain west who participated in a telephonic intervention for depression program. The results of this study provides some insight about the factors that contribute

to people dropping out of telemental health programs and potentially aid future implementers of such programs to apply them more effectively.

Chapter Two

Telemental Health

Telemental health (also called eHealth, teletherapy, telepsychology or telepsychiatry) has been defined as “the use of electronic communications technology to eliminate or reduce geographic barriers to receiving psychiatric and other mental health services provided by many mental health providers” (Hailey, Roine, & Ohinmaa, 2008). Telemental health technology includes media such as the telephone, Internet, and videoconferencing (Mohr, 2009), which can be used in a number of roles in mental health treatment, including triage, consultation and education, providing referrals, diagnostic evaluation, and psychotherapy (Vandenbos & Williams, 2000). Telemental health technology has also been effectively utilized for the provision of psychiatric services, including diagnostic evaluation, consultation and monitoring of medication adherence (Hailey, Roine, & Ohinmaa, 2008; Ruskin et al., 2004).

Telemental health interventions have been implemented with increasing frequency in order to address geographic, financial, health, social, or other barriers to receiving treatment (Mohr, Vella, Hart, Heckman, & Simon, 2008), as well as to reduce the costs associated with providing treatment (Gilbody, Whitty, Grimshaw, & Thomas, 2003). As telemental health interventions have become more widely implemented,

researchers have begun to examine the efficacy of these interventions in outcome studies for various conditions (Heckman & Carlson, 2007; Lynch, Tamburrino, Nagel, & Smith, 2004; Mohr et al., 2005). Much of the research on the efficacy of telemental health interventions has been done in the last 15 years; as recently as 1996 there was virtually no research on telemental health efficacy (Haas, Benedict, & Kobos, 1996). Some research has also explored the similarities and differences between telemental health and traditional psychotherapy (Morgan, Patrick, & Magaletta, 2008; Ruskin et al., 2004; X Day & Schneider, 2002). Further studies have focused on clinicians' and clients' attitudes toward utilizing telemental health technology in treatment (Mohr et al., 2010; Simms, Gibson, & O'Donnell, 2011; Vandenbos & Williams, 2000).

Studies of the effectiveness of telemental health interventions have generally agreed on the efficacy of these interventions in treating a range of mental health problems. Hailey, Roine, and Ohinmaa (2008) recently conducted an extensive review of the telemental health efficacy literature. This review included for analysis a broad range of studies, including both psychiatric and psychotherapy telemental health interventions for a wide range of conditions, including depression, dementia, schizophrenia, suicidal ideation, post-traumatic stress, panic disorder, substance abuse, eating disorder, smoking cessation, and obsessive-compulsive disorder. Additionally, the investigators reviewed studies that examined different modalities of treatment delivery, including the telephone, Internet, and videoconferencing technologies (Hailey, Roine, & Ohinmaa, 2008).

A total of 72 telemental health outcomes studies were included in the analysis. These studies were evaluated in terms of the quality of the design and the content of the results (e.g. whether the telemental health intervention was deemed as suitable for use

with a certain population). In the majority of the studies reviewed and evaluated, either strong or moderate support for the use of various telemental health interventions existed for use with different conditions (Hailey, Roine, & Ohinmaa, 2008). Twelve of the articles reviewed specifically examined the efficacy of telemental health interventions in the treatment of depression. Of these twelve articles, eight were large-scale randomized controlled trials ($n > 50$ in each condition), while an additional two were smaller scale randomized controlled trials ($n < 50$ in each condition). Ten of the twelve articles related to depression provided strong support for the use of telemental health technology in treating depression. The majority of these studies were conducted with a telephonic intervention (8 of 12). This review lends some support to the use of telemental health interventions with various conditions, and the evidence seems particularly strong for treating depression with these interventions. The authors note that further research is warranted to provide additional support for the use of these interventions, particularly studies that utilize a randomized controlled design to compare telemental health with traditional forms of therapy (Hailey, Roine, & Ohinmaa, 2008).

A more focused meta analysis was recently conducted using studies that specifically examined the efficacy of telephonic interventions in the treatment of depression (Mohr, Vella, Hart, Heckman, & Simon, 2008). A total of 12 studies were identified where a telephonic intervention was implemented to treat depression. Nine of the 12 identified studies were randomized controlled trials, while the other three were single-arm studies. The aims of the randomized controlled trials included comparing telemental health interventions to treatment as usual controls, and all 12 studies examined pre- and post-intervention symptoms of depression. The meta analysis found a significant

effect size ($d = 0.26$, $p < .001$) when comparing telemental health interventions to treatment as usual controls. Additionally, a significant effect size ($d = 0.81$, $p < .001$) was found when comparing pre- and post-treatment depressive symptoms (Mohr, Vella, Hart, Heckman, & Simon, 2008). These findings suggest that telephonic interventions for depression can reduce depressive symptoms and are generally more effective than treatment as usual control conditions. As with the literature review, the authors of the meta analysis article suggest that the use of telemental health interventions looks promising, but that further research is warranted, especially research that compares telemental health interventions directly with face-to-face psychotherapy (Mohr, Vella, Hart, Heckman, & Simon, 2008).

Some research has been conducted to directly compare telemental health interventions with traditional, face-to-face psychotherapy. One randomized controlled trial conducted by X Day and Schneider (2002) compared face-to-face psychotherapy with videoconferencing and telephonic conditions on the variables of working alliance and outcome. This study demonstrated no significant differences in either the therapeutic alliance or treatment outcomes between face-to-face psychotherapy and therapy conducted using telephonic or videoconferencing technology. Participants in the face-to-face and both telemental health conditions showed significant improvement in symptoms from pre- to post-treatment, and no significant differences existed between the improvements shown in each group (X Day & Schneider, 2002).

A similar study was conducted comparing face-to-face psychiatry services with those of psychiatric services provided through telemental health technology. Ruskin et al. (2004) examined outcomes, satisfaction with treatment, and medication adherence in a

group of 119 depressed veterans. They found that participants in both face-to-face and telemental health groups experienced reductions in depressive symptoms, with no significant differences in outcomes, satisfaction with treatment, or adherence to medication (Ruskin et al., 2004). These direct comparisons between telemental health and traditional treatments demonstrate greater similarities between the modes of delivery than differences, and lend support to the use of telemental health interventions.

Additional research into clients' perceptions of telemental health versus traditional psychotherapy lends support to the use of telemental health in delivering treatment. Morgan, Patrick, and Magaletta (2008) explored the treatment experiences of 186 inmates at a correctional facility who were randomly assigned to either face-to-face or telemental health treatment conditions. The variables of interest included the participants' perceptions of the therapeutic alliance, post-session participant mood, and overall satisfaction with treatment. No significant differences were found between face-to-face and telemental health treatment groups, either for psychotherapy or psychiatric services for any of the variables studied (Morgan, Patrick, & Magaletta, 2008). This suggests that the method of delivery, whether it be face-to-face or through telemental health media, does not seem to have a significant impact on the client's treatment experience.

Some research has sought to explore how clinicians and utilizers of mental health services perceive the use of telemental health interventions. While these interventions may be efficacious in treating depression, they will provide little benefit to overcoming barriers to mental health treatment if clinicians are unwilling to implement them or clients unwilling to engage in them. Several studies have examined perceptions of

telemental health interventions. One of the earlier studies that examined clinicians' use of telemental health was done by Vandenbos and Williams (2000). In this study, the authors surveyed a large, random sample of practicing psychologists from various locations across the United States to determine their rates of usage of various technologies in their clinical practice. The study found that over 65% of psychologists reported using the telephone for individual counseling purposes, with even larger proportions using the telephone for referrals, triage or emergency care, and consultation and education (Vandenbos & Williams, 2000).

A more recent study by Simms, Gibson, and O'Donnell (2011) explored clinicians' perceptions about telemental health, including possible limitations and barriers to its use. These authors found that the majority of clinicians have generally positive attitudes toward using telemental health technology in the practice of psychology. Some of the perceived strengths of telemental health methods included the ability of technologies to overcome geographical barriers and improve the efficiency of delivery of therapy services to numerous clients. Some psychologists reported concerns related to client safety in emergency situations. Additionally, clinicians reported that client characteristics were an important consideration when determining appropriateness of telemental health interventions. Clients who are seen as emotionally labile or lacking adequate coping skills were seen as less appropriate for such interventions (Simms, Gibson, & O'Donnell, 2011).

Research has also investigated the experiences and perceptions of those who receive telemental health services. Mohr et al. (2010) explored the treatment preferences of 658 primary care patients. A large majority (91%) of these participants stated they

would be interested in receiving face-to-face psychotherapy, while a slight majority (62%) also reported interest in telephonic treatment. However, among participants who reported time limitations as a barrier to receiving treatment, preference was slightly higher for telephonic and internet-based treatment than for face-to-face psychotherapy. This result suggests that these telemental health interventions may be helpful in eliminating a barrier to receiving mental health treatment (time limitations) that some people may experience (Mohr et al., 2010). While interest in telemental health services was not as high as interest in face-to-face treatment in this study, the high proportion of patients who were interested in telephonic treatment suggests that there is a place for telemental health in the market of psychological services.

In summary, while the body of research related to telemental health is somewhat new in comparison to many other areas of psychotherapy, a number of quality studies have been conducted that lend support to the use of telemental health technology as an adequate medium of providing mental health services. These interventions have demonstrated to be effective in treating various mental health conditions and have to date shown no significant differences from traditional face-to-face treatment. However, the breadth of investigation in telemental health needs to be extended to new populations, including ethnic minorities and those from lower income brackets. As Minami (2008) states, “if telephone administered therapy is efficacious, what then becomes the question is for whom a certain format of administration is useful or contraindicated” (pp. 254-255). By identifying the characteristics of the clinicians, clients, and settings that lead to optimum telemental health outcomes, future interventions can be implemented more

efficiently and to greater effect. One important outcome that merits further investigation in telemental health interventions is attrition.

Attrition

Attrition (also called early termination, premature termination, unilateral termination, drop out, or withdrawal) from counseling or psychotherapy is an issue that has received considerable attention from clinicians. Many clinicians perceive clients who drop out of treatment as declining to take advantage of services that could be beneficial to their lives (Lambert, 2004). Due to this generally negative connotation given to attrition, some research has aimed to identify factors related to attrition in order to give clinicians some ability to predict when early termination is likely to occur. When the possibility of attrition is suspected, the clinician can then alter the course of treatment in order to increase the likelihood that the client will continue in therapy, thus enhancing the treatment outcome (Lambert, 2004).

It has been found that a substantial number of clients drop out of mental health treatment during the early stages of therapy. In one of the earliest analyses of attrition, Baekeland and Lundwall (1975) found that about 20% of clients drop out of treatment following the first session, and the majority of clients (56%) drop out within the first four sessions (Baekeland & Lundwall, 1975). More recent research indicates that between 30% and 60% of clients terminate treatment prematurely (Clarkin & Levy, 2003) in traditional psychotherapy settings. This issue may be even more significant in telemental health settings, where some research has reported attrition rates over 90% in Internet-delivered interventions (Christensen, Griffiths, Mackinnon, & Brittliffe, 2006;

Eysenbach, 2005). The issue of early termination from therapy is significant due to findings about the dose-response of psychotherapy (Hansen, Lambert, & Forman, 2002). Research in this area suggests that 50% of psychotherapy clients show demonstrable improvement in symptoms after receiving between 13 and 18 sessions of therapy. However, in a review of 6,000 psychotherapy clients from a national database, the average number of sessions attended was less than five (Hansen, Lambert, & Forman, 2002). This suggests that the average consumer of psychotherapy does not attend enough sessions to experience demonstrable changes in symptoms and functioning. Research that explores the factors related to early termination has identified some variables that can be used to predict attrition from treatment. As the study utilized a sample of depressed patients, this review focuses on attrition in depressed patients receiving psychotherapy or psychopharmacological treatment.

Variables Related to Attrition

Ethnicity and Acculturation

Numerous studies have examined the influence of client ethnicity on attrition rates in psychotherapy. It has been reported that clients from minority ethnic groups demonstrate different utilization rates and treatment outcomes from White clients (Sue, Fujino, Hu, Takeuchi, & Zane, 1991). As such, most clinicians have moved away from a “one size fits all” understanding of treatment and researchers have examined how ethnicity contributes to treatment outcomes, including attrition rates.

Research has consistently demonstrated a relationship between client ethnicity and early termination from therapy, particularly with depressed clients. One study examined a sample of 175 White and ethnic minority outpatients who received cognitive

behavioral therapy for depression. This study demonstrated that the ethnic minority participants were significantly more likely to drop out of treatment prior to completion than the White participants, with attrition rates nearing 60% (Organista, Muñoz, & Gonzalez, 1994). In another large study of 681 outpatients randomized to cognitive behavioral, psychopharmacological, or combined treatments, participants from ethnic minority groups were significantly more likely to drop out from treatment than White participants in all conditions; the attrition rate for ethnic minority participants was 34%, compared to a dropout rate of 22% for White participants (Arnow et al., 2007). This relationship between ethnic minority status and treatment dropout has been replicated in examinations of antidepressant medication adherence (Warden et al., 2007; Warden et al., 2009) and in longitudinal studies of the chronically depressed (McFarland & Klein, 2005). A few studies have specifically identified Hispanic/Latina/o clients as being more likely to drop out of treatment than White clients or those from other ethnic minority groups, such as African Americans (Sue, Fujino, Hu, Takeuchi, & Zane, 1991; Warden et al., 2009).

While ethnicity has been significantly correlated with attrition rates, it is important to recognize that significant variability exists in attrition rates within ethnic minority groups (McCabe, 2002). One factor that may account for some of this variability is acculturation. Clients who are more acculturated to the majority culture may have values and beliefs that are more congruent with participation in psychotherapy than those who are less acculturated (McCabe, 2002). Studies have demonstrated a relationship between level of acculturation and attrition rates for Latina/o patients; those who are more highly acculturated tend to attend more therapy sessions than those who are less

acculturated (Kanter, Santiago-Rivera, Rusch, Busch, & West, 2010; Miranda, Andujo, Caballero, Guerrero, & Ramos, 1976). However, this relationship was not replicated in a family therapy setting for Mexican American families (McCabe, 2002). Further research must be done to determine whether acculturation predicts attrition in Hispanic/Latina/o clients.

Age and Gender

Some research has examined the relationship between client age and attrition rates in depressed patients, with mixed results. Research that has found a significant relationship between age and treatment dropout has generally found that younger clients tend to drop out of treatment at higher rates than older clients, in both psychotherapy and psychopharmacological interventions (Arnow et al., 2007; McFarland & Klein, 2005; Pinto-Meza et al., 2011; Warden et al., 2007; Warden et al., 2009). However, not all studies have found a significant relationship between age and attrition (Hopko, Robertson, & Colman, 2008), and thus results are mixed (Lambert, 2004). Further investigation is needed to provide additional insight into how client age and propensity to drop out of treatment are related, particularly among clients from diverse ethnic groups.

Few studies have examined the relationship between gender and attrition rates for depressed patients. In one study (Pinto-Meza et al., 2011), the authors found that women had lower attrition rates than men in a sample of 626 European males and females from the general population who had utilized mental health services. For males, 26% terminated psychotherapy early, while 24% terminated psychopharmacological treatment early. The female attrition rates were 18% for psychotherapy and 17% for pharmacological treatment. This suggests that females may have slightly lower attrition

rates than males. However, another study conducted with outpatient clients in the United States found that women were actually more likely than men to drop out of treatment prior to the first session, but that attrition rates were not significantly different as the number of sessions increased (Simon & Ludman, 2010). The relationship between gender and attrition is not well-established and further research in this area is needed.

Income

Some evidence exists that correlates depressed clients' income level with attrition from treatment. In one large study of 3,581 depressed primary care patients on antidepressant medication, it was found that attrition rates had a significant inverse relationship with client income level. Clients who were in the lowest income brackets demonstrated the highest rates of dropout from treatment at 24%, while those of the highest income bracket had an attrition rate of only 15% (Warden et al., 2009). Further evidence for the relationship between income and attrition comes from a large, randomized controlled trial comparing attrition in psychotherapy, medication, and combined treatment groups. In all conditions, client income was a significant predictor of treatment dropout, with clients of lower income levels showing higher dropout rates (Arnow et al., 2008). Additionally, in a large study of low-income, depressed minority outpatients receiving psychotherapy, Organista, Muñoz, & Gonzalez (1994) found an attrition rate nearing 60%. This rate is significantly higher than attrition rates found in similar large studies of depressed clients composed largely of members of the middle-class (Elkin, Shea, Watkins, Imber, & Sotsky, 1989). These studies suggest a relationship between income and attrition where clients who report lower levels of income demonstrate higher attrition rates.

Severity and Change of Depressive Symptoms

Numerous studies have examined the relationship between clients' depressive symptoms and likelihood to drop out of treatment. Some of these studies have explored how initial depression scores are related to attrition rates (Persons, Burns, & Perloff, 1988; Simon & Ludman, 2010; Warden et al., 2008). In such analyses, results have been mixed. While some studies demonstrate that those with more severe baseline depressive symptoms tend to have higher dropout rates (Hopko, Robertson, & Colman, 2008; Simon & Ludman, 2010; Warden et al., 2008), other research has shown that clients with lower baseline depressive symptoms are more likely to drop out of treatment prior to the initial session (Persons, Burns, & Perloff, 1988). These results suggest that clients with low levels of depression may be less likely to enter treatment than those with more severe depression, but that they are less likely to drop out once treatment is underway. This may be because clients with mild depression feel more equipped to deal with their depressive symptoms without treatment than those with more severe depression, and clients with more severe depression may have greater difficulty continuing to engage in therapy for an extended period of time.

Research has also examined the relationship between changes in depressive symptoms and dropout from therapy. The question can be asked: Do clients who experience remission of depressive symptoms leave therapy prematurely, or are clients who experience no change in their symptoms more likely to drop out? Several studies have indicated that clients who experience perceived improvements in symptoms tend to have higher attrition rates than those who do not (Freund, Russell, & Schweitzer, 1991; Manthei, 1995; May, 1991). In one follow-up with clients who did not return after the

initial session, 20% of respondents indicated that they had not returned because the first session had been of sufficient help, and 50% of respondents suggested that they no longer needed counseling (May, 1991). This suggests that a substantial proportion of clients who “prematurely terminate” therapy actually perceive no need to continue treatment.

Interestingly, Lambert (2004) points out the following:

“There is a sharp contrast between the number of clients who terminate therapy after one session and the attention clinicians give to recommending no treatment for a particular client... clinicians almost uniformly recommend treatments to those who seek help, while clients often decide after evaluation that pursuing treatment is not needed or indicated” (p. 197).

While many clinicians perceive attrition as a negative outcome, it may at times reflect a perceived lack of need for treatment on the part of the client. Thus, in assessing attrition, it is important to examine whether changes in depressive symptoms may have occurred, thus leading to termination of treatment.

Self-efficacy

Self-efficacy has been described as “an integrative theoretical framework to explain and to predict psychological changes achieved by different modes of treatment” (Bandura, 1977, p. 191). According to this definition, changes that occur in clients’ depressive symptoms during the course of therapy are explainable, at least in part, by the clients’ level of self-efficacy. While some researchers argue that self-efficacy is a domain-specific construct (Cervone & Scott, 1995), some researchers, such as Sherer (1982) have argued for the utility of a global construct of self-efficacy, referring to a general sense that a person’s efforts will yield the desired result.

Research has demonstrated that people with higher levels of perceived self-efficacy are more likely to persevere with difficult tasks. In one study, Bandura and

Cervone (1983) presented subjects with a difficult problem to assess their degree of persistence. Subjects had been divided into different groups, which received differing levels of self-efficacy enhancing interventions. The groups which received the most self-efficacy promoting interventions demonstrated the highest levels of persistence with the task (Bandura & Cervone, 1983). It is likely, then, that clients with higher global levels of self-efficacy would be more likely to persist in treatment, even if they do not perceive it to be beneficial to them.

Some research has directly examined the relationship between self-efficacy and attrition. One study by Schoenthaler, Ogedegbe, and Allegrante, (2009) with African Americans receiving treatment for depression in a primary care setting found that those with higher self-efficacy showed greater adherence to their antidepressant medication than those with lower levels of self-efficacy (Schoenthaler, Ogedegbe, & Allegrante, 2009). Clients with higher perceived self-efficacy have also shown greater ability to cope with symptoms of depression (Cervone & Scott, 1995). In a more general group of 139 outpatients, clients with higher levels of self-efficacy were more likely to return to treatment following the initial session (Longo, Lent, & Brown, 1992). It seems likely that for clients participating in a telemental health intervention, self-efficacy would also play a role in participants' decisions to persist in or drop out of treatment.

Comorbid Anxiety

Some research has examined how comorbid anxiety with depression impacts attrition rates from treatment. In one large study of 1,664 outpatients who received mental health treatment in the United States, it was found that patients who had comorbid depression with anxiety tended to have higher rates of attrition from treatment than those

who had either just depression or anxiety (Olfson et al., 2009). This result was replicated in a smaller sample of depressed outpatients in a behavioral activation treatment; those with higher self-reported levels of pre-treatment anxiety displayed higher rates of dropout than those who had lower levels of anxiety (Herman et al., 2002). Another study demonstrated this result in a large, randomized controlled trial comparing different forms of treatment for depression (Arnow et al., 2007). In the overall sample, clients who had depression with comorbid anxiety were more likely to drop out than those with no comorbid anxiety. These results suggest that clients who are experiencing both depressive and anxiety symptoms are less likely to persist in treatment.

Treatment Expectancy

One of the most widely studied components of client personality as it relates to treatment outcomes is treatment expectancies. As far back as 1966, Paul and Shannon demonstrated that clients with expectancies for positive outcomes were more likely to experience positive outcomes than those with lower expectations (Paul & Shannon, 1966). Gaston et al. (1989) also found that clients who expected treatment to work generally experienced more positive outcomes than those who had more neutral or negative expectations. Studies have also correlated client treatment expectancies with average treatment duration (Lorr & McNair, 1964; Jenkins, Fuqua, & Blum, 1986) and attrition rates (Overall & Aronson, 1963). Research on the impact of client's treatment expectancies on attrition and duration of treatment has consistently demonstrated that expectancies play a role in enhancing outcomes.

Therapist Variables

While the characteristics of the recipients of mental health services have shown to be related to the outcome of treatment, the characteristics of the therapist can also be an important factor that can influence outcomes. Some research has sought to determine whether certain therapist characteristics lead to better outcomes in mental health treatment. In a standardized telephonic intervention, perhaps the most salient therapist characteristics are those that are observable by the participant over the telephone, such as the therapist's general age, gender, and perceived ethnicity (based on fluency in Spanish or last name) for participants who identify as Hispanic/Latina/o, especially those who are not highly acculturated. It is worthwhile to review the literature related to these therapist characteristics as it pertains to attrition from mental health treatment.

Age

Research related to the impact of therapist age on the treatment outcome has demonstrated mixed results. One of the most recent studies that systematically examined therapist age as a predictor of outcomes was done by Barber and Muenz (1996). This study found no significant relationships between therapist age or similarity of age between client and therapist to the treatment outcome. However, some earlier research that examined therapist age found an interaction effect between therapist and client age. One such study demonstrated that clients who saw therapists who were ten or more years younger than they were experienced the poorest treatment outcomes (Beck, 1988). However, this finding has not been replicated on a consistent basis and there remains little conclusive evidence that therapist age directly impacts the treatment outcome, separate from other factors such as experience or theoretical approach.

Gender

Some studies have sought to examine the influence of the therapist's biological gender on the treatment outcome. One meta-analysis on the effect of therapist gender on the treatment outcome found a small but significant effect size for gender, with female therapists having slightly better outcomes than male therapists ($d = .04$; Bowman, Scogin, Floyd, & McKendree-Smith, 2001). However, a more recent meta-analysis by Beutler et al. (2004) failed to find a significant effect size for therapist gender, suggesting that therapist gender is not a factor that is important to the treatment outcome. As with therapist age, research on the impact of the therapist's gender on the treatment outcome has demonstrated mixed results. Some evidence exists that female therapists may have slightly more favorable outcomes than male therapists (Krippner & Hutchinson, 1990), though these results are not consistently replicated and are inconclusive at best.

Ethnicity

The vast majority of research on therapist ethnicity as it relates to treatment outcomes examines the therapist's ethnicity in relation to the client's ethnicity. Some research exists that demonstrates a relationship between the client-therapist ethnic match and the treatment outcome. For example, Sue et al. (1991) found that ethnic minority clients who receive treatment from a therapist of the same ethnicity are less likely to drop out of treatment. Similarly, clients who are of the same ethnic minority group as their therapist tend to have slightly better treatment outcomes than those who are of a different ethnicity from their therapist (Yeh, Eastman, & Chung, 1994). Such research suggests that, especially for clients who identify as ethnic minorities, having a therapist of the

same ethnicity or who may share similar ethnic experiences may enhance the treatment outcome and reduce attrition.

Hypotheses

In light of the previous research on telemental health and attrition, the following hypotheses provided direction for this study:

1. There are no significant differences in participant attrition due to demographic variables (ethnicity, age, gender, income)
2. Baseline scores for depression, self-efficacy, acculturation, treatment expectancy, and the presence of co-morbid mental illness predict attrition rates among participants.
3. Changes in depression scores over the course of treatment predict attrition rates among participants.
4. Therapist age, gender, and ethnicity do not significantly predict attrition from telemental health treatment. For low acculturated Latina/o participants, language match between the therapist and participant predicts attrition.

Chapter Three

The data for this study came from a dataset collected as part of a larger study examining the efficacy of telephonic counseling for depression among low-income patients in a primary-care setting. The data were collected at multiple points over the course of the intervention, which enabled the analysis of changes that occurred to depressive symptoms over time.

Participants

The sample for this study included 155 adults, ages 19 to 65, who were receiving treatment for depression from their primary care provider at a large health care organization in the intermountain west. Participants in this study represented various ethnic backgrounds, with roughly 37% of the sample identifying as White, 53% as Hispanic, and 10% as African American. None of the participants identified as an American Indian or Alaskan Native, Asian, or Native Hawaiian or Pacific Islander. The majority of participants in the study were female, representing approximately 81% of the sample. The mean reported age of participants upon matriculating into the study was 45.8 years. Participants were also of low-income backgrounds, as determined by both their reported income and insurance status; all participants either had Medicaid or were

uninsured, and the highest reported annual household income was less than \$35,000, with many participants reporting an annual income of zero.

The majority of participants had been prescribed an antidepressant medication from their primary care provider. The duration and severity of depressive symptoms among participants varied widely. However, participants all obtained a score of 10 or greater on the Patient Health Questionnaire (PHQ-9) at the start of the program, indicating the presence of at least moderate depressive symptoms for the previous two weeks. Table 1 shows the frequencies and percentiles of participants' reported gender, ethnic background, and annual income level. Figure 1 provides the distribution of participant ages at the time of matriculation into the study.

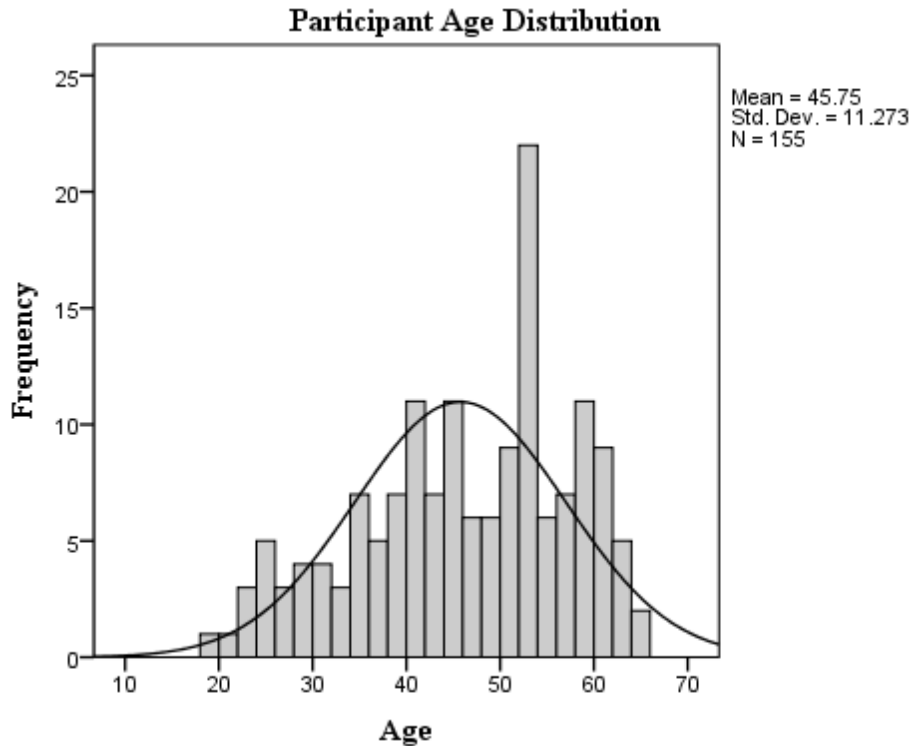
Table 1

Frequencies and Percentiles of Participants' Reported Gender, Ethnicity, and Income Level

	N	Percent
Gender		
Female	126	81.3
Male	29	18.7
Ethnicity		
Black or African American	16	10.3
Hispanic or Latina/o	82	52.9
White	57	36.8
Annual Household Income		
None	48	31
< \$10,000	52	33.5
< \$15,000	17	11
< \$20,000	5	3.2
< \$25,000	2	1.3

< \$30,000	0	0
< \$35,000	4	2.6
Don't Know	27	17.4

Figure 1
Participant Age Distribution



It was important to ensure that participants were physically and mentally capable of completing the program, and that the specified intervention would be appropriate for implementing with each participant. For these reasons, several exclusion criteria were used to screen candidates for appropriateness. These exclusion criteria included having a diagnosis of bipolar disorder, the existence of active psychosis, active suicidality, perinatal depression, or active substance dependence, and cognitive or language deficits. The presence of such factors would have a confounding effect on the efficacy of the

intervention and may prevented the participants from being able to complete the program. Additionally, in order to attempt to control for the amount of care received for depression, only candidates who had not engaged in mental health treatment for the past 90 days were included in the study. For candidates who lacked consistent access to a telephone, the option to meet face-to-face to conduct the intervention and assess outcomes was provided. As was anticipated, face-to-face contact occurred infrequently, in less than 3% of cases. These cases were excluded from the attrition analyses, as the method of treatment delivery for these participants would not be considered as telemental health treatment.

Measures

Attrition

Attrition in this study was assessed as a continuous variable, which accounts for varying levels of attrition occurring throughout the program. Participants were eligible to receive a total of five intervention calls following the initial assessment and consent to participate in the program. As such, it was anticipated that attrition from the program would occur at each point for some participants. In order to examine differences between participants who dropped out after the first call and those who persisted for all but the final call, attrition was assessed based on the total number of calls the participants completed prior to dropping out of the program. While it is anticipated that some participants dropped out voluntarily due to lack of interest in continuing the program, it is likely that some participants counted in the attrition groups were simply dropped from the program due to difficulties in maintaining contact with the telephonic clinicians. As there

was no information available about reasons for dropping out of the program, all participants who dropped out at each point in the program were grouped together.

Age, Gender, Ethnicity and Income

The demographic variables of age, gender, ethnicity and income were assessed through several brief demographic questions given at the start of the initial assessment and outcomes calls. Age was assessed in years, and gender was assessed in a discrete category of “male” or “female.” Ethnic categories included “American Indian or Alaskan Native,” “Asian,” “Black or African American,” “Hispanic or Latino,” “Native Hawaiian or Pacific Islander,” and “White.” There were also options for participants to choose “Other” or “Don’t Know” categories. Yearly income brackets included the options “Less than \$10,000”, “Less than \$15,000”, “Less than \$20,000”, “Less than \$25,000”, “Less than \$35,000”, “Less than \$50,000”, “Less than \$75,000”, or “\$75,000 or more”, with an option for participants to also select “Don’t know.” It was anticipated that a large majority of participants would fall into the income brackets of “Less than \$25,000” and below, which was consistent with results from the actual sample.

Depression

The presence and severity of depressive symptoms were assessed using the Patient Health Questionnaire (PHQ-9). The PHQ-9 is a brief, nine item instrument that can be used to evaluate and track changes in depressive symptoms over time. The items on the PHQ-9 are based on the diagnostic criteria for major depressive disorder contained in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV; American Psychiatric Association, 2000). Items on the PHQ-9 are assessed on a four point scale that evaluates the frequency of specific depressive symptoms over the

previous two week period. Items include statements such as, “Feeling down, depressed, and hopeless”, and “Trouble concentrating on things, such as reading the newspaper or watching television” (Kroenke, Spitzer, & Williams, 2001). Overall scores can range from zero to 27, and higher scores suggest more severe depressive symptoms. Score ranges and qualitative descriptions of severity on the PHQ-9 are presented in Table 2 below.

Table 2.

Qualitative descriptions of PHQ-9 scores

Score	Severity
0 - 4	No depression
5 - 9	Mild depression
10 - 14	Moderate depression
15 - 19	Moderately severe depression
20 - 27	Severe depression

In this study, only participants with initial PHQ-9 scores of 10 or greater were included, suggesting at least moderate depressive symptoms at the start of the program. The PHQ-9 has demonstrated good internal consistency across multiple, large samples, including Cronbach’s Alpha estimates of 0.89 and 0.86 in two samples of 3,000 participants from primary care and obstetrics-gynecology settings, respectively (Kroenke, Spitzer, & Williams, 2001). The data available for use in this study only had total PHQ-9 scores at each time point for each participant; as such a calculation of the Cronbach’s Alpha coefficients with this sample was not possible.

A thorough investigation of the validity of the PHQ-9 was conducted in 2001 by Kroenke, Spitzer, and Williams. In this study, the authors examined the criterion and construct validity of the PHQ-9 by comparing participants' scores on the measure to clinicians' diagnoses of depression made through structured psychiatric interviews, participants' self-reports of functional impairment, and comparisons with objective measures of functional impairment on the Medical Outcomes Study Short-Form General Health Survey (SF-20) (Stewart, Hays, & Ware, 1988). The results of these comparisons demonstrated strong criterion-related and construct validity for the PHQ-9; participants with diagnoses of major depressive disorder showed higher scores than those with no major depression diagnosis, and higher scores on the PHQ-9 also correlated highly with greater levels of functional impairment in participants' lives (Kroenke, Spitzer, & Williams, 2001). Since its development and subsequent validation, the PHQ-9 has become a commonly-used measure of depression severity in a variety of settings (Titov et al., 2011).

The PHQ-9 has demonstrated utility in comparison with other measures of depression, such as the BDI-II, in that it is a brief instrument that can be used to quickly assess for the presence and severity of depression (Titov et al., 2011). The PHQ-9 has also demonstrated the ability to be sensitive to changes in depressive symptoms over time (Löwe, Kroenke, Herzog, & Gräfe, 2004), and has been effectively used to assess treatment outcomes in depressed patients using both psychotherapy (McMillan, Gilbody, & Richards, 2010) and psychopharmacological (Löwe, Schenkel, Carney-Doebeling, & Gräfe, 2006) methods of treatment.

The PHQ-9 has also shown good psychometric properties when used with Hispanic populations. A 2010 study by Donlan and Lee using a Spanish version of the PHQ-9 demonstrated that when used to assess depression in low-income Mexican migrant workers, the internal consistency of the PHQ-9 was strong (Cronbach's Alpha = 0.92), as was the factor structure, with individual items correlating highly with the underlying dimensions ($r = 0.66 - 0.80$; Donlan & Lee, 2010). Another recent study has demonstrated similarly high internal consistency for both English and Spanish versions of the PHQ-9 (Cronbach's Alpha = 0.84 – 0.85) in a group of 479 Hispanic American women (Merz, Malcarne, Roesch, Riley, & Sadler, 2011). Such studies lend support for the use of both English and Spanish versions of the PHQ-9 with a Hispanic population.

Self-Efficacy

Patient perceived self-efficacy were assessed using the General Self-Efficacy Scale (GSES), developed by Schwarzer and Jerusalem (1995). This scale is a brief, 10-item questionnaire that is designed to assess for a global construct of perceived self-efficacy, as discussed by Sherer (1982). The items on the measure are assessed on a four point scale that indicates the participants' level of agreement. Examples of items on the GSES include, "I can always manage to solve difficult problems if I try hard enough", "I am confident that I could deal efficiently with unexpected events", and "If I am in trouble, I can usually think of a solution." Overall scores on the GSES range from 10 to 40, with higher scores indicating higher levels of perceived self-efficacy.

The GSES has demonstrated good internal consistency in samples from 23 different nations, with Cronbach Alpha estimates between .76 and .90 (Schwarzer &

Jerusalem, 1995). As with the other measures in this study, the available data did not include individual item scores, and calculation of the Cronbach's Alpha coefficients with this sample was not possible. Additionally, the GSES has shown good criterion-related validity in several studies, as scores on the GSES have shown significant negative correlations with depression, anxiety, and stress (Schwarzer & Jerusalem, 1995), and positive correlations with health behavior, general well-being, and coping (Luszczynska & Schwarzer, 2005). These good psychometric properties of the GSES, along with its brevity and unidimensional measurement of global self-efficacy, make it a suitable instrument for use in this study.

Acculturation

The participants' level of acculturation was assessed using a scale adapted from the Short Acculturation Scale for Hispanics (SASH; Marín, Sabogal, VanOss Marín, Otero-Sabogal, & Pérez-Stable, 1987). The SASH was developed as a brief measure of the degree to which Latinos/Latinas have adopted the majority culture in the United States. The original SASH consists of 12 items that examine three dimensions of acculturation. These dimensions include language preferences, media preferences, and social preferences. Items are rated on a five point scale ranging from "Only Spanish" to "Only English" for items assessing language and media preferences. The social items are rated on a five point scale ranging from "All Latinos/Hispanics" to "All Americans." Participants are asked to rate their preferences for language use, media consumption, and friends/social interactions using these five point scales. Scores on the SASH range from

12 to 60, with higher scores reflecting greater levels of acculturation to mainstream American culture. The scale is available in both English and Spanish versions.

The modified scale used in this study has removed two of the social items from the original SASH, items 11 and 12. Marín et al. (1987) suggest that the scale can be reduced to a minimum of four items (items one, three, four, and five) without sacrificing predictive value, validity, or reliability (Marín, Sabogal, VanOss Marín, Otero-Sabogal, Pérez-Stable, 1987). For the purpose of this study, the scale was slightly shortened to reduce the length of the outcomes calls. The range of possible scores for the resulting modified scale was from 10 to 50.

In a sample of 363 Hispanic Americans of varying ages and ethnicities, the SASH demonstrated good internal consistency, with a Cronbach's Alpha of 0.92. A factor analysis conducted with this sample showed that over two-thirds of the variance in scores could be attributed to three factors. These three factors reflected participants' language use, media, and social preferences. Each of these factors also demonstrated good internal consistency (Cronbach Alpha = 0.78 – 0.90; Marín, Sabogal, VanOss Marín, Otero-Sabogal, Pérez-Stable, 1987).

Some research has demonstrated good criterion-related and concurrent validity for the SASH. Scores on the SASH have been significantly correlated with participants' generation in the United States, length of residence in the United States, participants' subjective evaluations of acculturation, and age of arrival in the United States, and has also demonstrated ability to discriminate between Hispanics and non-Hispanic Whites (Marín, Sabogal, VanOss Marín, Otero-Sabogal, Pérez-Stable, 1987). Additionally, scores on the SASH have been shown to correlate highly with scores on other measures

of acculturation for Hispanics, such as the Bidimensional Acculturation Scale for Hispanics (BAS; Marín & Gamba, 1996). Due to the brevity of the SASH and its good psychometric properties for use with diverse Hispanic clients, its use in this study as a measure of acculturation seemed appropriate.

Comorbidity

Comorbid mental illness was assessed through the use of the Mini-International Neuropsychiatric Interview – Screen (MINI-Screen; Sheehan et al., 1998). The MINI was developed as a brief, structured diagnostic interview that assesses for various mental health diagnoses using DSM-IV criteria. An even briefer version of the MINI, the MINI-screen, was also developed specifically for use in a primary care setting (Sheehan et al., 1998). The MINI-screen assesses for symptoms of mania, panic disorder, agoraphobia, social anxiety disorder, generalized anxiety disorder, substance dependence, substance abuse, psychotic disorders, and post-traumatic stress disorder. The questions are asked in a closed-ended format, though clinicians can incorporate additional information provided by the patient into the diagnostic impressions. A sample item on the MINI-screen for social anxiety disorder asks, “In the past month, were you fearful or embarrassed being watched, being the focus of attention, or fearful of being humiliated?” (Sheehan et al., 1998). For this study, the MINI-screen was administered in either English or Spanish over the telephone during the initial assessment call, and the scoring was completed by computer. The MINI-screen was designed to take five minutes to administer (Sheehan et al., 1998). The output for the MINI-screen indicates whether responses were consistent

with symptoms suggesting a diagnosis of one of the previously mentioned mental health conditions.

The MINI has demonstrated very high inter-rater reliability (Kappa = 0.79 – 1.0) and moderate to high test-retest reliability as well for the different diagnostic categories (Kappa = 0.35 – 1.0; Sheehan et al., 1998). Additionally, the MINI has shown to have a high level of agreement with other assessments of mental health disorders, including lengthier standardized diagnostic interviews and experts' diagnostic impressions (Sheehan et al., 1998). As a brief screening assessment of comorbid mental health disorders, the MINI-screen was an appropriate tool for use in this study.

Treatment Expectancy

Treatment expectancy was assessed informally through two questions asked by the telephonic clinicians that evaluated the participants' level of willingness to engage in their treatment and hopefulness that the treatment would be helpful. The following questions were asked:

How confident are you that you will be able to do all of the things recommended by your doctor to treat your depression?

At this point, how helpful do you think your treatment will be at improving your depression?

For each question, participants provided a rating on a four point scale. This scale ranged from “Not at all (confident/helpful)” to “Very (confident/helpful).” Responses were then coded into scores ranging from one to four for each question, and a composite treatment expectancy score was obtained by using the sum of these two scores. Higher

treatment expectancy scores reflected a higher level of confidence and hope in the treatment being received.

Procedures

Recruitment

Participants for this study were recruited using several methods. The primary method of recruitment was through contacting potential participants identified as having recently filled a prescription for an antidepressant medication at the pharmacy of a large health care network in the intermountain west. Other recruitment methods included informing primary care providers of the nature of the program and encouraging referrals, as well as making resources available for patients about the program, who then referred themselves to the program. As potential candidates for participation in the study were identified, they were randomly assigned to one of two groups. Those who were in the intervention group received the telephonic intervention from the clinicians, while those in the control group continued “treatment as usual” (TAU) for depression from their primary care provider. TAU may have consisted of antidepressant medication and routine follow-up with the participant, but could not include mental health therapy or counseling for continued participation in the study. Participants who were found to be receiving additional mental health treatment during the course of the program were disqualified from the study.

The initial contact was made by the telephonic clinicians, who had specialized training in assessing participants’ symptoms and implementing the intervention over the telephone. The telephonic clinicians were recruited from nearby graduate programs in

social work and clinical and counseling psychology, as well as from the psychology training program at the hospital where the study was conducted. All telephonic clinicians had a master's degree in a mental health field and clinical experience providing therapy to depressed patients. A total of 10 clinicians participated in this project, eight of which identified as female and two as male. The clinician ages ranged from 24 to 51 years old, with the median age being 29 years old.

The clinicians engaged in several days of didactic training related to the intervention and measures used, as well as practice delivering the intervention and live observation prior to making calls to participants. The potential participants were invited to participate in an assessment of their mental health symptoms, during which time they were screened for participation in the study. Potential participants who qualified for the study were given an overview of the program and were invited to participate. Informed consent was obtained through voice recordings of the participants providing consent to participate. After consent was obtained, the clinicians set up appointments to implement the telephonic intervention with the participants. Additionally, for participants in both groups who consent to share information with their primary care provider, feedback was provided to the primary care provider about the participants' depressive symptoms, comorbidity of other mental illness, and information related to the participants' antidepressant medication adherence.

Following the initial assessment and each intervention call afterwards, participants also received a summary of what was discussed through the mail. The intervention calls were scheduled at two week intervals following the initial assessment. Additionally, participants received three additional telephone calls from a research

assistant at six, 12, and 24 week intervals from the initial assessment, during which outcomes data were collected, including depressive symptoms, behavioral activation, and physical/emotional functioning. Participants in the study received gift cards for \$10 to \$25 for each of the three outcomes calls they completed.

Intervention

The intervention for this study was a five session, standardized behavioral activation treatment for depression. The duration of each session was between 15 and 30 minutes, and sessions were conducted primarily over the telephone, though options for face-to-face meetings were also available, primarily for participants who did not have consistent access to a telephone. It was anticipated that only a small percentage of participants would opt to have face-to-face meetings (less than five percent), which was consistent with the actual sample. The data from participants who chose to have face-to-face meetings instead of telephonic sessions were not included in the analysis.

The primary focus of the intervention was to increase participants' engagement in various activities, which can help reduce stress and provide a sense of accomplishment. During the first intervention call, clinicians engaged participants in a discussion about depression and how it relates to behavior. During this call, participants agreed to track their activities over the next two weeks, using a tracking list that is mailed to them following the initial assessment. Additionally, during this call and each subsequent call, clinicians followed-up with participants about their adherence to their prescribed antidepressant medication, and encouraged adherence by helping participants address

barriers if any existed. Following each call, clinicians also mailed a summary of the content of the call to participants.

The focus of the second intervention call was for clinicians to help participants draw a connection between their previous two weeks' activities and their mood. Using the tracking list, clinicians helped participants identify activities that improved their mood and make plans with participants to engage more frequently in these activities for the following two weeks. During the third intervention call, clinicians discussed the importance of social support with participants and how having support from others can help with depression. Clinicians engaged participants in a discussion about their social support network, making plans to increase social support if necessary.

In the fourth intervention call, the clinicians worked with participants to create a self-care plan for dealing with depressive symptoms in the future. This self-care plan included elements related to behavioral activation (i.e., planning to do certain activities in times of stress or sadness), as well as highlighting the importance of social support. Following this call, the clinician mailed a copy of the self-care plan to the participant. During the fifth and final intervention call, clinicians briefly followed-up with participants, processed the participants' experiences in the program, reinforced the importance of self-care, encouraged adherence to the self-care plan, and terminated the relationship. Though some variability in duration was expected, the entire course of the intervention was intended to occur over a 12 week period. A final outcomes call occurred at the 24-week mark to determine whether changes that occurred in symptoms through the course of the intervention have been maintained over time.

Data Analysis

The data for this study were analyzed using linear regression and analysis of variance tests. These tests require that the data meet certain assumptions to ensure the integrity of the results. Both linear regression analysis and analysis of variance tests assume that the data are normally distributed, that the relationships between the independent variables and dependent variable are linear, and that there is homoscedasticity in the data, which means that the variability in the scores for the independent variables is roughly equal for all values of the dependent variable (Tabachnick & Fidell, 2007). For this dataset, in consideration of the sample size and the nature of the independent variables being measured, a normal distribution of participant demographics, predictor variables, and dropout times was expected, as was linearity in the relationships between the independent variables and attrition. These assumptions, along with homoscedasticity in the dataset, were tested to ensure that linear regression was appropriate. Histograms in Figures two through six demonstrate the distributions of these variables against a normal curve. Figures eight through 13 show plots for the residuals for age, acculturation, treatment expectancy, baseline depression, baseline self-efficacy, and attrition. The flat linear fit lines for these plots suggest homoscedasticity for these variables.

Linear regression analyses were utilized to determine the extent to which the continuous independent variables that met the assumptions described above (depressive symptoms, change of depressive symptoms, income, self-efficacy, and age) predicted

attrition at each time point. Logistic regression was used to determine to what extent these variables predicted either completion or dropout from the intervention.

For the purposes of data analysis in this study, comorbidity of mental illness was examined as a nominal variable representing the different categories of comorbid mental illness. These categories included anxiety disorders and substance abuse. The different categories of comorbid mental illness were analyzed using analysis of variance in order to determine whether differences existed in attrition rates based on the type of comorbid mental illness present. Effects of the two nominal variables, gender and comorbid mental illness, were also analyzed using analysis of variance to determine whether significant differences exist in the rates of attrition for these groups. Analysis of variance was also used to compare attrition rates for participants of different ethnic groups, as well as differences in attrition rates due to participant level of acculturation.

Hierarchical linear modeling was utilized to examine the relationship between changes in depressive symptoms over time and attrition from the telephonic intervention. Hierarchical linear modeling can be conceptualized as a two stage model, in which both stages are carried out simultaneously (Bryk & Raudenbush, 1987). At the first stage, change within the individual is examined as a function of the individual's growth trajectory plus random error. In this study, the first stage of the HLM analysis examined changes in the probability of participant dropout as influenced by participant depressive symptoms (as measured by the PHQ-9). The elements of the first stage of the HLM analysis are described below.

$$Y_{ij} = \pi_{0i} + \pi_{1i}(Time_{ij}) + \pi_{2i}(PHQ9_{ij}) + \varepsilon_{ij},$$

Y_{ij} represents the observed outcome of participant i at time point j ; π_{0i} represents the intercept and is the participant's probability of dropping out of the intervention at the beginning of the program; π_{1i} is the slope for the participant's individual attrition probability trajectory over time; π_{2i} represents the slope of the participant's depression scores; finally, ε_{ij} represents the error term in the equation. In summary, this stage uses initial attrition probability (π_{0i}), the slope for the participant's attrition probability curve over time (π_{1i}), the participant's depressive symptoms (π_{2i}), and error (ε_{ij}) to explain the probability of attrition for a particular participant at a particular point in treatment.

Stage two of HLM serves to explain variance in the individual parameters used in stage one, including π_{0i} (attrition probability intercept), π_{1i} (attrition probability slope), and π_{2i} (PHQ-9 slope). In this stage, the parameters from stage one serve as the dependent variables, with separate equations for each parameter. The equations for the parameters are as follows:

$$\begin{aligned}\pi_{0i} &= \gamma_{00} + u_{0i} \\ \pi_{1i} &= \gamma_{10} + u_{1i} \\ \pi_{2i} &= \gamma_{20} + u_{2i}\end{aligned}$$

The γ parameters in these equations represent the group mean scores for each of the corresponding individual-level parameters. In this case, γ_{00} represents the group initial attrition probability average, γ_{10} represents the group attrition probability slope average, and γ_{20} represents the group PHQ-9 slope average at the corresponding time point. The u parameters represent the residual terms, which allow for the assumption that

π_{0i} , π_{1i} , and π_{2i} vary across individuals (Bryk & Raudenbush, 1987). Specifically, u_{0i} allows for random variance between individuals in the intercept, u_{1i} allows for random variance between individuals in the attrition probability slope, and u_{2i} allows for random variance between individuals in the PHQ-9 slope.

Because of the two stage conceptualization of hierarchical linear modeling, the process simultaneously explains both individual and group patterns of change over time. In this study, HLM explained how individual participants' attrition probability rates changed over time, as well as why participants' change may differ from one another due to differences in changes in PHQ-9 scores.

Chapter Four

Baseline Data

The variables assessed at baseline included patient depression scores, acculturation for Hispanic/Latina/o clients, self-efficacy, co-morbid anxiety or substance abuse, and treatment expectancy. Descriptive data for depression, acculturation, self-efficacy, and treatment expectancy are presented in Table 3. The distributions of scores for these variables are shown in Figures 2 through 5. The normal curve is superimposed on the histograms in Figures 2 through 5 for distribution comparison.

Table 3

Means, Standard Deviations, and Ranges of Participants' Baseline Depression, Acculturation, Self-efficacy, and Treatment Expectancy Scores

	Mean	SD	Range	Skewness	Kurtosis
Depression	16.92	4.12	17	.172	-.701
Acculturation	27.56	15.08	40	.097	-1.744
Self-efficacy	26.84	7.91	30	-.345	-.714
Treatment Expectancy	3.38	.648	3	-1.268	1.511

Figure 2
Distribution of Baseline Depression Scores

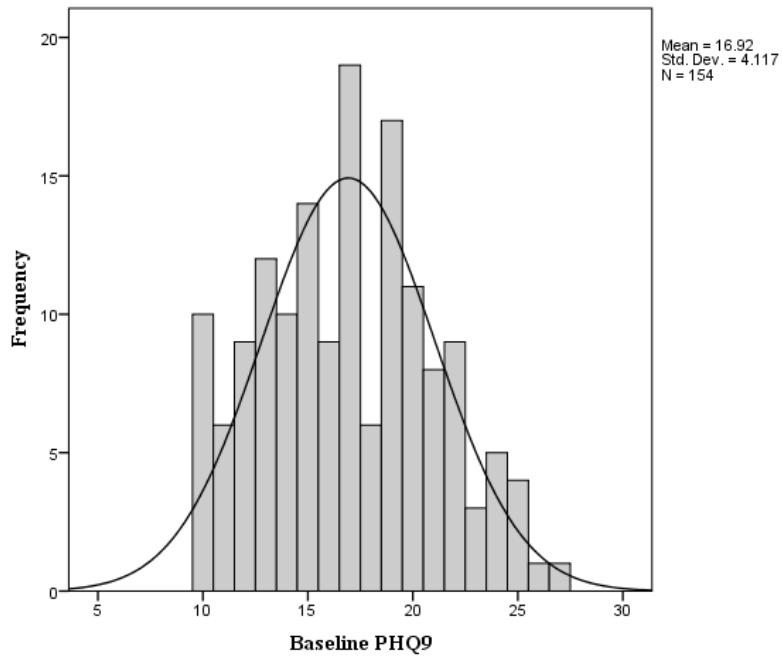


Figure 3
Distribution of Acculturation Scores

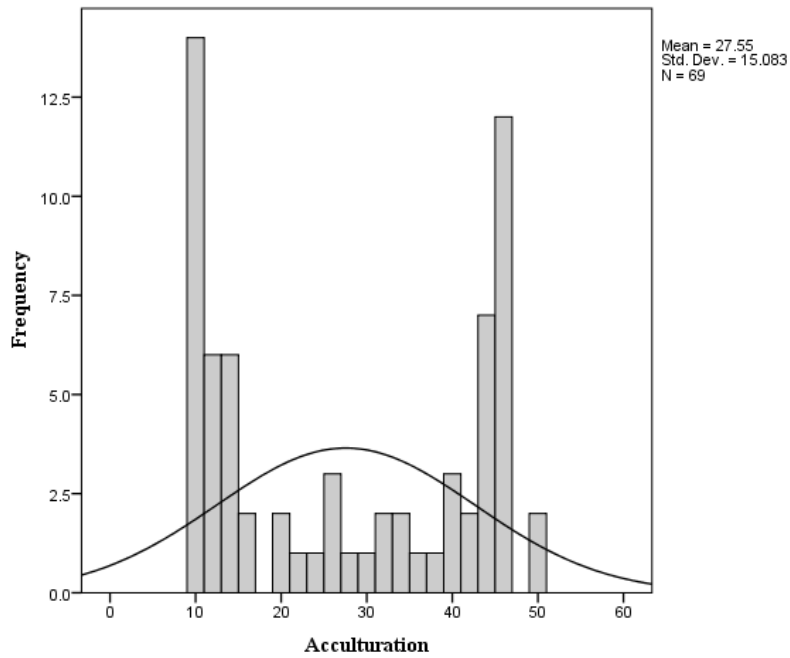


Figure 4
Distribution of Self-efficacy Scores

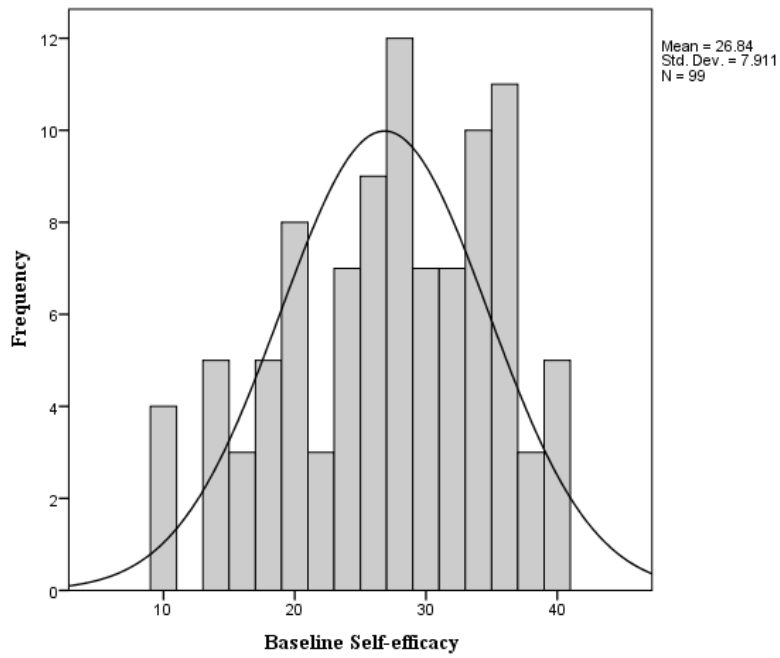
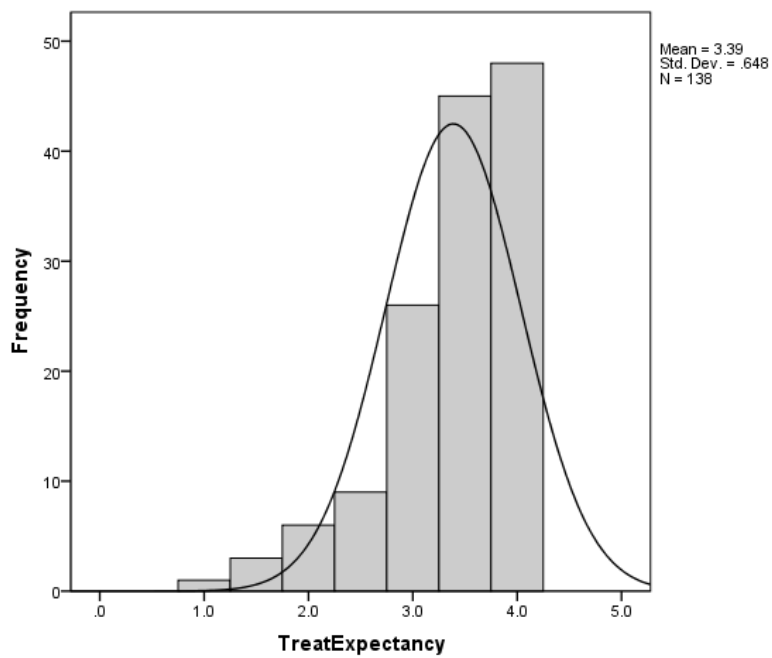


Figure 5
Distribution of Treatment Expectancy Scores



The data presented in Table 3 demonstrate a mean baseline depression score of 16.92 (SD = 4.12) for all participants. This suggests that the average participant began the program with depressive symptoms that would be categorized as moderately severe on the PHQ-9. Figure 2 demonstrates that the distribution of baseline depression scores followed a normal curve. As participants with scores lower than 10 were excluded from the study, there are no scores on the low end of the normal curve.

The mean baseline acculturation score for participants who identified as Hispanic/Latina/o was 27.56 (SD = 15.08). This would suggest that the average participant identified as moderately acculturated to the U.S. majority culture. However, in examining the histogram presented in Figure 3, it is noted that the distribution of acculturation scores for participants in this study was bimodal. The majority of participants either identified as having acculturated minimally to U.S. majority culture, or as being highly acculturated. Due to the bimodal distribution of acculturation scores, the low-acculturated and high-acculturated participants were treated as separate groups in the regression analysis, with cutoff scores for low-acculturated participants being less than 20 on the SASH (n = 30), and for high-acculturated participants being greater than 40 on the SASH (n = 23). A third group was comprised of participants whose acculturation scores ranged between 20 and 40 (n = 17). The mean acculturation scores for these subgroups were 11.83 for the low acculturation group, 30.71 for the medium acculturation group, and 45.17 for the high acculturation group. A univariate ANOVA demonstrated that the mean acculturation scores significantly differed for each of these three groups ($F = 546.14$, $df = 2$, $p < .001$)

The mean baseline self-efficacy score was 26.84 (SD = 7.91). This suggests that the average participant in the study had a moderate level of self-efficacy, and the scores were distributed across the full range of possible scores on the scale. Figure 4 suggests that the baseline self-efficacy scores were normally distributed.

The mean baseline treatment expectancy score for participants was 3.38 on a scale ranging from one to four, with higher scores indicating higher treatment expectancies. This mean suggests that the majority of participants were both fairly confident that the treatment program would be helpful in treating their depression, and that they were confident that they would be able to adhere to the treatment program. An examination of Figure 5 demonstrates that the treatment expectancy scores did not follow a normal distribution; the distribution was skewed toward higher treatment expectancy scores. The analyses of treatment expectancies should be interpreted with caution, as the treatment expectancy scores were not normally distributed.

Attrition

The overall attrition rate from the telephonic intervention program was 71.9%. Only 28 of the 155 participants completed the program, with fairly even distribution of attrition rates between each intervention call. The mean number of intervention calls completed prior to dropping out was 3.14 (SD = 1.80; skewness = .343; kurtosis = -1.189). The highest attrition rate occurred between the assessment call (first contact with clinicians) and the first intervention call, with 40 participants (25.8%) dropping out at this time point. The lowest attrition rate occurred between the fourth and fifth intervention calls, where only 10 participants (6.5%) dropped out from the program. The distribution of attrition rates at each time point are presented in Figure 6.

Figure 6
Distribution of Attrition Rates

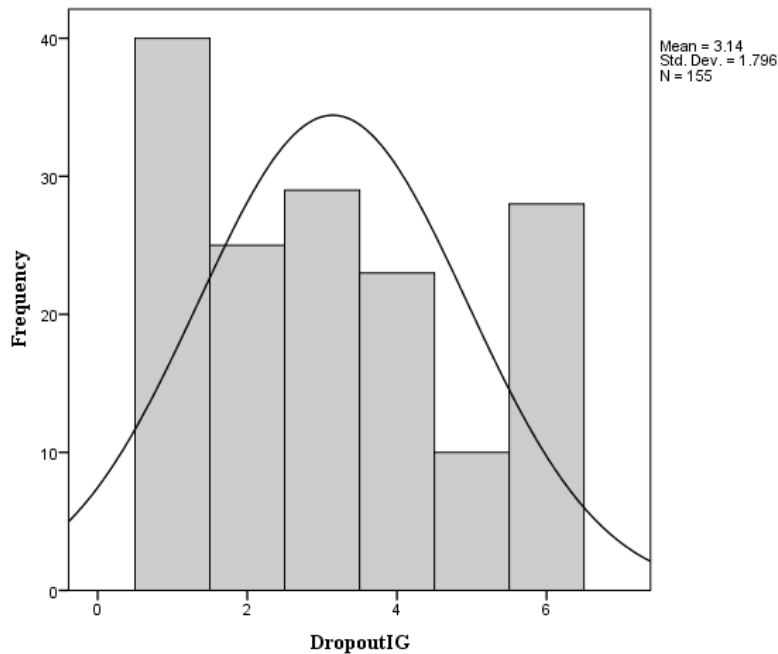


Figure 6 demonstrates the number of participants who dropped out *after* each time point, with the first time point referring to the initial contact and clinical assessment with the telephonic clinicians. Participants who are shown to have “dropped out” after the sixth time point are actually those who completed the intervention program.

Predictors of Attrition

Attrition from the intervention was explored in two ways: first, as a dichotomous variable indicating either dropout or completion of the program; second, as a continuous variable indicating the number of sessions a participant completed before dropping out. Logistic regression was utilized to determine whether participant age and/or baseline variables (depression, self-efficacy, treatment expectancy) predicted program completion

or dropout. The chi-square statistic for the model with these variables was 10.87, and the model was statistically significant at an alpha level of .05 ($p = .012$). The Nagelkerke R^2 for the model was .156. The results of the logistic regression analyses are presented in Table 4.

Table 4

Logistic Regression of Attrition Using Participant Age and Baseline Depression, Self-efficacy, and Treatment Expectancy Scores

	Beta	SE	Wald	p^2	e^B
Age	.063	.025	6.227	.013	1.065
Depression	-.140	.066	4.531	.033	.869
Self-efficacy	-.020	.032	.400	.527	.980
Treatment Expectancy	-.577	.326	3.131	.077	.562

¹ Model $\chi^2 = 10.87$, $df = 3$, $p = .012$

The results from Table 4 demonstrate that both participant age and baseline depression score on the PHQ-9 were significant predictors of whether a participant completed the telephonic intervention program or dropped out. Baseline self-efficacy and treatment expectancy scores were not significant predictors of attrition. Participants of higher ages and lower baseline depression scores were more likely to complete the intervention than younger and more depressed participants.

The time at which participants dropped out of the program was also examined, in order to determine whether participants with certain characteristics were more likely to persist in treatment. Linear multiple regression was used to determine whether participant

age, as well as baseline depression, self-efficacy, and treatment expectancy scores significantly predicted the participants' time of attrition from the intervention program.

The results from the regression analysis are presented in Table 5.

Table 5

Participant Age and Baseline Depression, Self-efficacy, and Treatment Expectancy Scores as Predictors of Time of Attrition

	B	SE(B)	β
Age	.041*	.012	.256
Depression	-.065	.035	-.149
Self-efficacy	-.025	.023	-.110
Treatment Expectancy	-.274	.229	-.102

* - $p < .05$; $R^2 = .164$; Adjusted $R^2 = .127$

Table 5 demonstrates that baseline depression, self-efficacy, and treatment expectancy scores are not significant predictors of the time at which participants dropped out of the telephonic intervention program. Age was a significant predictor of time spent in treatment, with a one year increase in age corresponding to a .041 increase in the number of sessions completed by the participants.

Univariate one-way and two-way ANOVA tests were used to examine differences in the number of sessions attended between groups of participants. The variables examined in the ANOVA analyses were gender (male and female), acculturation (high, medium, and low), ethnicity (White, Black, and Hispanic/Latina/o), income level (refer to Table 1 for categories of income), and co-morbid mental illness (none, anxiety, and

substance abuse). Potentially relevant interaction effects between gender, acculturation, and ethnicity were also examined using two-way ANOVA. The results of the ANOVA are presented in Table 6.

Table 6

Differences in Attrition Rates by Gender, Acculturation, Ethnicity, Income Level, and Co-morbid Mental Illness

	SS	df	MS	F	<i>p</i>	Eta-squared
Gender	1.012	1	1.012	.312	.577	.002
Acculturation	3.849	3	1.283	.527	.665	.020
Ethnicity	17.084	2	8.542	2.706	.070	.034
Income Level	10.835	5	2.167	.678	.641	.027
Gender X Acculturation	7.212	2	3.606	2.277	.110	.058
Gender X Ethnicity	16.318	2	8.159	2.624	.076	.034
Co-morbid Anxiety	2.332	1	2.332	.722	.397	.005
Co-morbid Substance Abuse	.099	1	.099	.030	.862	.000

The results presented in Table 6 suggest that there were no significant differences in attrition rates due to participant gender, acculturation, ethnicity, or income level, and that there were no interaction effects between gender and acculturation or gender and ethnicity. Additionally, there were no significant differences in attrition rates between patients who were only diagnosed with depression and those who had co-morbid diagnoses of anxiety or substance abuse.

The relationship between changes that participants experienced in their depressive symptoms over the course of the program and attrition was examined using hierarchical linear modeling (HLM). The mixed model utilized to explore this relationship was as follows:

$$\eta_{it} = \beta_{00} + \beta_{01} * PHQ9_i + \beta_{10} * TIME_{it} + \beta_{11} * PHQ9_i * TIME_{it} + r_{0i} + r_{1i} * TIME_{it}$$

In this model, η_{it} represents the probability that participant i will drop out of the intervention at time point t . The $TIME$ variable represents the number of telephonic intervention calls completed; the $PHQ9$ variable represents the depression scores for participant i as measured by the PHQ-9. The results for this HLM analysis are presented in Table 7.

Table 7

Change in PHQ-9 Scores as a Predictor of Attrition Probability

Fixed Effect	Coefficient	SE	t	d.f	p
For INTERCPT1, π_0					
INTRCPT2, β_{00}	-1.689	.022	-75.337	153	<.001
PHQ9, β_{01}	-.007	.005	-1.459	153	.147
For TIME slope, π_1					
INTRCPT2, β_{10}	-.156	.063	-2.490	153	.014
PHQ9, β_{11}	-.030	.014	-2.060	153	.041

The results of the HLM analysis presented in Table 7 demonstrate that changes in PHQ-9 scores over the course of the telephonic intervention predict changes in the

probability that a participant will drop out from treatment. Earlier regression analyses showed that baseline PHQ-9 scores were not a significant predictor of time of attrition; however, the changes in these scores over time do significantly predict time of attrition. According to this model, a one point increase in PHQ-9 scores from one time point to the next lowers the probability of a participant dropping out of the program by 0.03. This result is demonstrated visually in Figure 7.

Figure 7
Effect of PHQ-9 Scores on Attrition Over Time

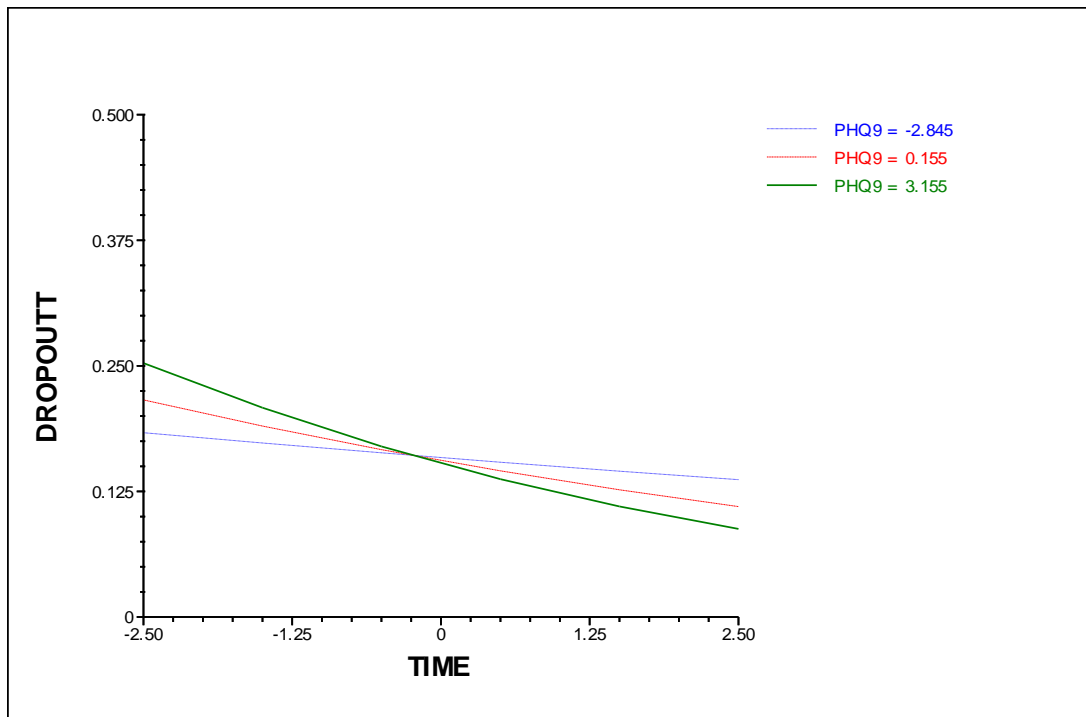


Figure 7 shows change trajectories in attrition probabilities for PHQ-9 scores in the 25th, 50th, and 75th quartiles of the sample. While there was a general trend for attrition probabilities to decrease over time, this trend was more pronounced for

participants with higher PHQ-9 scores. These participants became increasingly less likely to drop out from treatment than those with lower PHQ-9 scores.

Therapist Variables

The relationship between the characteristics of the telephonic clinicians and participant attrition were explored using linear regression and one-way ANOVA. The therapist characteristics that were examined were age, gender, and ethnicity. Due to the fact that all contact between participants and the telephonic clinicians occurred over the telephone, the impact of the clinician's ethnicity on participant attrition is limited to the participant's perception of the clinician. As such, the age of the telephonic clinicians was subject to participant interpretation, as was ethnicity. Therapist ethnicity in this study was operationalized to indicate whether the clinician conducted therapy fluently in either English or Spanish. Due to the lack of information as to how the clinicians were perceived by the participants, the results in this area should be interpreted with caution.

Therapist age was examined in relation to both overall attrition and timing of attrition using logistic and linear regression, respectively. For the logistic regression, the chi-squared statistic for the model with therapist age was 1.882, and the model was non-significant ($p = .170$). The Naglekerke R^2 was .020. The results of the analysis for therapist age are presented in Tables 8 and 9.

Table 8

Therapist Age as a Predictor of Overall Attrition

	Beta	SE	Wald	p ²	e ^B
T. Age	.127	.099	1.628	.202	1.135

[†] Model $\chi^2 = 1.882$, df = 1, p = .170

Table 9

Therapist Age as a Predictor of Time of Attrition

	B	SE(B)	β	R ²	Adjusted R ²
T. Age	.114	.012	.192	.037	.031

The results from Tables 8 and 9 suggest that therapist age did not significantly predict whether a participant completed or dropped out of the telephonic intervention, but that therapist age was a significant predictor of the time at which dropout occurred. A one year increase in therapist age was associated with a .114 session increase in the number of sessions attended.

Differences in attrition rates based on the clinician's gender and their language proficiency were examined using one-way ANOVA. Additionally, two-way ANOVA was used to examine interaction effects between therapist language and participants' level of acculturation. Only the participants who identified as Hispanic/Latina/o were included in the analysis of clinician language. The results of these analyses are presented in Table 10.

Table 10

Attrition Rate Differences Due to Therapist Gender and Language

	SS	df	MS	F	<i>p</i>	Eta-squared
Therapist Gender	4.879	1	4.879	1.518	.318	.017
Therapist Language	5.994	1	5.994	2.587	.112	.000
T. Language X Acculturation	11.712	3	3.904	1.685	.178	.001

The results of the ANOVA presented in Table 10 suggest that the gender of the telephonic clinician, the clinician's fluency in English or Spanish, and the interaction between language and acculturation did not have significant impacts on the rate of attrition of participants. The age of the therapist was the only therapist characteristic that had any significant effect on participant attrition from the telephonic intervention program, with participants who worked with older clinicians persisting longer in the program.

Chapter Five

The results of this study provide some insight into the relationships between patient characteristics, therapist characteristics, and attrition in telemental health interventions. These results are discussed in light of the stated hypotheses, as well as their implications, limitations, and directions for future study.

One of the primary perceived benefits of telemental health interventions is that they may be utilized to overcome some barriers to receiving psychotherapy services (Mohr, 2009). While previous research on attrition in traditional psychotherapy has demonstrated that patient demographic characteristics can influence unilateral dropout (Clarkin & Levy, 2003), it was anticipated that these characteristics would not be an important factor in predicting dropout for the telemental health intervention. The demographics that were examined in this study were participant age, gender, ethnicity, and income. Of these, only participant age was a significant predictor of attrition from the intervention. Older participants showed a greater propensity for persisting in the program than their younger counterparts.

There are several possible explanations for this age effect. It may be that older participants, particularly those who might consider themselves elderly, have somewhat more limited opportunity to develop new relationships and have formal conversations.

Such participants may identify as lonely and appreciate the concern and support they receive from regular phone contact with a clinician. Another possible explanation of this age effect is that older clients may have developed a more mature sensitivity to mental health issues, the need for support from a mental health professional, or greater patience to endure perceived “bumps in the road” during the therapy process. This finding that older participants tended to drop out from treatment less often than younger participants is consistent with research from traditional psychotherapy about age and attrition (Arnow et al., 2007).

Participant gender, ethnicity, and income were not significant predictors of attrition from the telemental health intervention. These results are contrary to the literature on attrition in traditional psychotherapy, where significant differences exist related to these demographic variables (Organista, Muñoz, & Gonzalez, 1994; Pinto-Meza et al., 2011; Warden et al., 2009). The lack of these demographics’ ability to predict attrition in this telemental health intervention lends support to the idea that such interventions may function to overcome some barriers to treatment. It may be that the groups who are more likely to drop out in traditional psychotherapy are more amenable to the idea of working with a clinician when a telemental health delivery method is utilized. Possible explanations for this include the reduction of stigma due to receiving services in the privacy of one’s own home, convenience, or economic reasons. While it is recognized that participants in this study did not pay for the treatment they received (and in fact were compensated), telemental health services are intended to be deliverable at a lower cost than traditional psychotherapy services. These factors may contribute to telemental health

methods of delivery helping to overcome barriers to receiving treatment in some populations.

It was anticipated that the participants' baseline depression, self-efficacy, acculturation, and treatment expectancy scores would significantly predict attrition from the intervention, as would the presence of comorbid substance abuse or anxiety. Such characteristics have demonstrated a significant relationship with attrition in traditional psychotherapy (Jenkins, Fuqua, & Blum, 1986; McCabe, 2002; Schoenthaler, Ogedegbe, & Allegrante, 2009; Simon & Ludman, 2010). Of these baseline measures, only the depression score had some ability to predict participant attrition. Participants' baseline depression scores on the PHQ-9 significantly predicted whether a person would complete the treatment program or drop out at some point, though it did not significantly predict the timing of dropping out. Participants who demonstrated higher baseline depression scores were less likely to drop out at some point during the intervention. The research on the relationship between initial severity of depressive symptoms and attrition in traditional psychotherapy has been mixed, with some studies showing higher attrition rates among the more severely depressed patients, and others showing higher attrition rates among the less depressed patients (Persons, Burns, & Perloff, 1988; Simon & Ludman, 2010).

A possible explanation for the finding in this study that higher baseline depression scores are related to greater persistence in the intervention is that participants who had active suicidal ideation were excluded from participation in the study. In traditional psychotherapy, a patient who reports active suicidal ideation (often a symptom of more severe depressive symptoms) is still likely to receive treatment for their depression. In

this program, such patients were excluded from participation, due to the limited amount of contact between the patient and the telephonic clinician, and lack of resources to provide adequate support to such patients. This may point to a limitation of telemental health services in general, which is the lack of ability to provide adequate support to suicidal patients. In this study, the exclusion of such patients may have also caused a population that is at higher risk of dropping out of treatment to be excluded as well, effectively placing a ceiling on the ability of the most severely depressed to drop out from the program.

It was anticipated that changes in depression scores over the course of treatment would significantly predict attrition rates (May, 1991). The HLM analysis used in this study confirmed this hypothesis, suggesting that participants with higher PHQ-9 scores through the course of treatment became increasingly less likely to drop out of the intervention over the course of time. This result may suggest that participants who have mild to moderate depressive symptoms find it easier to withdraw from the program because they perceive that they no longer need the support the program offers. This would support Lambert's (2004) assertion that many patients who receive services terminate therapy after their symptoms improve; for some of these patients, treatment may not be warranted. One limitation of a telemental health intervention is that patients may not have to "buy in" as much to their treatment as they would in a traditional psychotherapy setting. Such patients who feel like their symptoms are under control may find it very easy to ignore a telephone call while they are busy; this would be more difficult to do if time has already been set aside to travel to a clinic to have personal contact with a therapist.

Interestingly, the participants' baseline self-efficacy, acculturation, and treatment expectancy scores were not significant predictors of attrition from the program. These results are different from what is present in the traditional psychotherapy literature, which indicates that clients who have higher self-efficacy, who are more highly acculturated, and who have higher treatment expectancies tend to persist longer in treatment (Jenkins, Fuqua, & Blum, 1986; McCabe, 2002; Schoenthaler, Ogedegbe, & Allegrante, 2009; Simon & Ludman, 2010). There are some possible explanations for this lack of relationship between these variables and attrition in this study.

In traditional psychotherapy, there are certain demands inherent to seeking services that are placed upon the patient. The patient must make time to travel to a clinic or counseling center, often during working hours, devote energy to a 50 minute session with their therapist, and pay a fee for the service. Research has demonstrated that people with a high level of self-efficacy are more likely to persist during difficult or demanding tasks (Bandura & Cervone, 1983); it may be that the relative ease of receiving services within a telemental health framework allows patients who are unable to cope with the demands of traditional psychotherapy to continue receiving services for a longer period of time. This would again suggest that telemental health services may help overcome some barriers to therapy.

In this study, acculturation among Hispanic/Latina/o participants did not significantly predict attrition from the telephonic intervention. There are some possible reasons for this that would warrant further investigation. The participants who identified as Hispanic/Latina/o in this study showed a bimodal distribution with regards to their acculturation. There were a large number of Hispanic/Latina/o participants who showed

low acculturation; there were also a large number who were highly acculturated. Very few participants fell into the “medium” acculturation range (refer to Figure 3). Due to the ability for low-acculturated participants to work with fluent Spanish-speaking therapists, there may have been less of a language barrier than what might exist in traditional psychotherapy. Another possible explanation for there not being a significant difference between low and high acculturated participants is that, once again, the demands of traditional psychotherapy may be more difficult to meet for low-acculturated patients, due to stigma, language barriers, or lack of familiarity with the therapy process. A telemental health intervention may increase this population’s access to therapy services, particularly when a Spanish-speaking therapist is available to provide services.

Participants’ baseline treatment expectancy scores were not a significant predictor of attrition from the intervention. While the ability of the baseline treatment expectancy scores to predict attrition approached significance (see Table 4), the distribution of scores was skewed and the amount of variability in scores was limited. This likely helps explain the lack of significance observed in the relationship between treatment expectancy and attrition. It is noted that the mean treatment expectancy score was somewhere between “somewhat confident/helpful” and “very confident/helpful” on the scale, suggesting that even in a telephonic intervention, participants had a high level of confidence and hope in treatment.

Comorbidity of anxiety or substance abuse were not significant predictors of attrition. It is noted that very few (eight) participants met criteria for substance abuse; this made it difficult to find significant differences in attrition rates for these participants due to the limited sample size. There were, however, 81 participants who met criteria for an

anxiety disorder. Contrary to what has been found in the literature with traditional psychotherapy (Olfson et al., 2009), the participants in the telephonic intervention showed no difference in attrition rates regardless of the presence of comorbid anxiety. It is possible that the method of delivering services in a telemental health intervention makes it easier for anxious patients to persist in therapy. Participants in this program were able to receive services in the comfort of their own homes, at times which were convenient to them, and without having to pay for services. These factors may help mitigate the anxiety that traditional psychotherapy may induce due to transportation, stigma, and financial issues.

One final predictor of attrition that was significant was the age of the therapist providing the intervention. The therapist characteristics (gender, age, and ethnicity) were not anticipated to be significant predictors of attrition, except for among low-acculturated Hispanics/Latina/o participants, who it was thought might persist longer in therapy with Spanish-speaking therapists. There was no relationship between acculturation, therapist language, and attrition, nor was the gender of the therapist a significant predictor of dropout. Participants were significantly less likely to drop out from treatment when they worked with older therapists.

Research conducted in traditional psychotherapy settings on the relationship between therapist age and attrition has generally demonstrated no significant relationship (Barber & Muenz, 1996). It is unclear as to why this was not replicated in a telemental health setting. This is particularly true due to the lack of face-to-face contact between the participants and clinicians; any judgment based on age by the participants would have solely been on the basis of the therapist's voice over the telephone. It may be that

therapists who are older simply have more experience with therapy in general; however, it should be noted that all of the telephonic clinicians in this study were new to telemental health delivery methods. There may also be an interaction between the method of delivering therapy and the age of the therapist, where an older therapist may have greater comfort with working with a patient over the telephone than a younger therapist that may be less accustomed to formal discussion over the telephone. This result is one that would merit further inquiry and investigation in order to tease out whether the greater persistence with older therapists is due to therapist experience, the method of delivering services, or something else entirely.

Implications

The results of this study have several implications for the implementation of telemental health programs, particularly in treating depression. The lack of significant differences in attrition rates among many participants from different groups lends some support to the idea that telemental health programs may help address some of the barriers that keep people from either seeking therapy for depression or persisting in their treatment program. Many of the characteristics that predict attrition in traditional psychotherapy did not predict attrition within this telemental health intervention program. While this should not be interpreted to indicate with any certainty that the telemental health intervention in this study did actually decrease barriers to treatment, additional research in this area could help elucidate the reasons for the lack significant differences in attrition rates based on several of the variables examined in this study.

For those variables that did significantly predict attrition, telemental health interventions may be most usefully implemented in working with older patients, who are moderately to severely depressed. Such patients may be the ones who are most likely to persist in and complete a telemental health treatment program. As this was not an outcome study, it is not clear whether this population actually received increased benefit from their persistence in the study, or whether their persistence may have been motivated by a recognition that they continued to have significant depressive symptoms.

The age of the therapist may be a consideration for seeking clinicians to staff telemental health programs. While the reason for relationship between therapist age and attrition are not clear, there is a significant difference between older and younger therapists, with participants who worked with older therapists persisting in the program for significantly longer. It may be important for new telemental health programs to recognize the characteristics of older therapists that help them retain their patients at a greater rate than younger clinicians.

Limitations

There are several limitations to this study that must be addressed to accurately understand the results and provide direction for future research. The generalizability of the results in this study may be limited to a demographically restricted population. All of the participants in this study were being treated for depression, and the majority of them were also taking antidepressant medication prescribed by their primary care provider. Nearly all of the participants were either uninsured or on government-sponsored insurance programs, and many of them reported no annual household income. No

participants of Asian, American Indian, Alaskan, Hawaiian/Pacific Islander, or any other ethnic groups aside from Black/African American, White, and Hispanic/Latina/o were represented. While the participants in this study seemed to be demographically similar to groups who seek services in primary care settings, caution should be exercised in interpreting these results to include patients from other ethnic groups, income levels, or who present with psychiatric conditions other than depression.

This study focused on patient and therapist characteristics as they relate to attrition. All of the variables utilized in the analyses were based on client report, and several of them were observable characteristics. This obviously excludes analysis of any logistical or psychological factors that may have contributed to participant dropout. Such factors may include change of phone number, dissatisfaction with the clinician, change in availability, seeking traditional psychotherapy, or a number of other confounding factors. Unfortunately, no post-intervention participant data are available; such data might be collected through a focus group that explores participants' experiences and impressions with the telemental health intervention, or even through the use of an additional survey after dropout.

Another significant limitation of this study is the lack of a comparison control group consisting of participants in traditional psychotherapy. Such a comparison would provide much stronger evidence for or against the ability of telemental health interventions to reduce or eliminate certain barriers to receiving treatment for some groups of people. The analyses conducted for this study are open to subjective interpretation as to the reasons for why the results occurred the way they did.

The intervention utilized in this study was a manualized behavioral activation intervention for the treatment of depression. It was intended to be conducted during brief sessions with the participants and it has a specified course of progression. If a different intervention were to be used, the attrition rates among different populations may also change, as it is currently unclear as to the extent to which the intervention itself was responsible for persistence or dropout for different groups of clients.

Future Directions

It is recommended that future research in the area of telemental health and attrition should utilize a control condition, ideally with random assignment, where some participants receive traditional psychotherapy and others receive telemental health treatment. Such a comparison would clarify the mechanisms responsible for barriers to receiving treatment for depression and enable providers to implement telemental health services efficiently and effectively.

The criteria used in this study to explore characteristics related to attrition should be broadened to include other variables. Variables of interest might include quality of the therapeutic relationship, previous experience in psychotherapy, and access to social support. As more characteristics are examined as they relate to attrition, telemental health programs can be more specifically targeted to maximize utility.

In addition to broadening exploration of patient and therapist characteristics related to attrition, the populations with whom such interventions are researched should also be expanded. With rapidly-evolving technology that provides ever-increasing access through telephone and internet, the settings in which telemental health services can be

provided should also be researched. It may be that such services have greater or lesser utility in certain settings, with certain groups of people, or for certain mental health problems. Broadening the scope of analysis may also open new doors of access to previously underserved groups.

Finally, future research in telemental health and attrition may benefit from extending the scope of delivery from telephone to internet, videoconferencing, and applications for mobile devices. Such interventions may become increasingly popular as access to mobile electronic devices that support such capabilities increases, potentially turning almost any space into a therapy space. Explorations into attrition using these technologies will be helpful in determining the course of telemental health in the future.

The field of telemental health is a young and exciting one with many possibilities for the future. This paper has offered some insight and recommendations into patient and therapist characteristics that may encourage persistence and completion of such programs in primary care settings. A good deal more research will be necessary to direct the development of telemental health toward directions that will yield the greatest benefit to groups of people who are currently underserved.

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Appendix A: Patient Health Questionnaire

PHQ-9

OVER THE LAST 2 WEEKS, how often have you been bothered by any of the following problems?

	Not at All	Several Days	More than half the days	Nearly every day
a. Little interest or pleasure in doing things	0	1	2	3
b. Feeling down, depressed, or hopeless, if under 18 years old, feeling down depressed, irritable or hopeless?	0	1	2	3
c. Trouble falling/staying asleep, sleeping too much	0	1	2	3
d. Feeling tired or having little energy	0	1	2	3
e. Poor appetite or overeating	0	1	2	3
f. Feeling bad about yourself - or that you are a failure or have let yourself or your family down	0	1	2	3
g. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
h. Moving or speaking so slowly that other people could have noticed. Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
i. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
If 1(i) = (1), (2) or (3), administer Suicide Risk Assessment				
Scoring Section				
Add up circled scores by column				
Record column scores in boxes below columns				
Add totals in boxes to derive Total Score				
				Total Score: <input style="width: 100px; height: 20px;" type="text"/>

Total Score	Depressive Severity	Action
0-4	None	No action required
5-9	Mild depression	Watchful waiting, supportive counseling
10-14	Moderate depression	Notify resident and/or attending physician
15-19	Moderately severe depression	
20-27	Severe depression	

Appendix B: General Self-Efficacy Scale

Self-efficacy - GSES Questionnaire

	Not at all true	Hardly true	Moderately true	Exactly true
a. I can always manage to solve difficult problems if I try hard enough	0	1	2	3
b. If someone opposes me, I can find the means and ways to get what I want	0	1	2	3
c. It is easy for me to stick to my aims and accomplish my goals	0	1	2	3
d. I am confident that I could deal efficiently with unexpected events	0	1	2	3
e. Thanks to my resourcefulness, I know how to handle unforeseen events	0	1	2	3
f. I can solve most problems if I invest the necessary effort	0	1	2	3
g. I can remain calm when facing difficulties because I can rely on my coping abilities	0	1	2	3
h. When I am confronted by a problem, I can usually find several solutions	0	1	2	3
i. If I am in trouble, I can usually think of a solution	0	1	2	3
j. I can usually handle whatever comes my way	0	1	2	3

Appendix C: Short Acculturation Scale for Hispanics

Acculturation Scale (Latina/o population only)

	Only Spanish	Spanish better than English	Both equally	English better than Spanish
a. In general, what language(s) do you read and speak?	1	2	3	4
b. What was the language(s) you used as a child?	1	2	3	4
c. What language(s) do you usually speak at home?	1	2	3	4
d. In what language(s) do you usually think?	1	2	3	4
e. What language(s) do you usually speak with your friends?	1	2	3	4
f. In what language(s) are the T.V. programs you usually watch?	1	2	3	4
g. In what language(s) are the radio programs you usually listen to?	1	2	3	4
h. In general, in what language(s) are the movies, T.V. and radio programs you <i>prefer</i> to watch and listen to?	1	2	3	4
	All Latinos/ Hispanics	More Latinos than Americans	About Half & Half	More Americans than Latinos
i. Your close friends are:	1	2	3	4
j. You prefer going to social gatherings/parties at which people are:	1	2	3	4

Appendix D: Mini-International Neuropsychiatric Interview

M.I.N.I.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

English Version 6.0.0

DSM-IV

USA: D. Sheehan¹, J. Janavs, K. Harnett-Sheehan, M. Sheehan, C. Gray.

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DISCLAIMER

Our aim is to assist in the assessment and tracking of patients with greater efficiency and accuracy. Before action is taken on any data collected and processed by this program, it should be reviewed and interpreted by a licensed clinician.

This program is not designed or intended to be used in the place of a full medical and psychiatric evaluation by a qualified licensed physician – psychiatrist. It is intended only as a tool to facilitate accurate data collection and processing of symptoms elicited by trained personnel.

M.I.N.I. 6.0.0 (October 10, 2010) (10/10/10)

C. MANIC AND HYPOMANIC EPISODES

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN MANIC AND HYPOMANIC DIAGNOSTIC BOXES, AND MOVE TO NEXT MODULE)

Do you have any family history of manic depressive illness or bipolar disorder, or any family member who had mood swings treated with a medication like lithium, sodium valproate (Depakote) or lamotrigine (Lamictal)? NO YES
THIS QUESTION IS NOT A CRITERION FOR BIPOLAR DISORDER, BUT IS ASKED TO INCREASE THE CLINICIAN'S VIGILANCE ABOUT THE RISK FOR BIPOLAR DISORDER.
IF YES, PLEASE SPECIFY WHO: _____

C1 a Have you **ever** had a period of time when you were feeling 'up' or 'high' or 'hyper' or so full of energy or full of yourself that you got into trouble, - or that other people thought you were not your usual self? (Do not consider times when you were intoxicated on drugs or alcohol.) NO YES

IF PATIENT IS PUZZLED OR UNCLEAR ABOUT WHAT YOU MEAN
BY 'UP' OR 'HIGH' OR 'HYPER', CLARIFY AS FOLLOWS: By 'up' or 'high' or 'hyper'
I mean: having elated mood; increased energy; needing less sleep; having rapid thoughts; being full of ideas; having an increase in productivity, motivation, creativity, or impulsive behavior; phoning or working excessively or spending more money.

IF NO, CODE NO TO C1b: IF YES ASK:

b Are you currently feeling 'up' or 'high' or 'hyper' or full of energy? NO YES

C2 a Have you **ever** been persistently irritable, for several days, so that you had arguments or verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or over reacted, compared to other people, even in situations that you felt were justified? NO YES

IF NO, CODE NO TO C2b: IF YES ASK:

b Are you currently feeling persistently irritable? NO YES

IS C1a OR C2a CODED YES? NO YES

C3 IF C1b OR C2b = YES: EXPLORE THE CURRENT AND THE MOST SYMPTOMATIC PAST EPISODE, OTHERWISE
IF C1b AND C2b = NO: EXPLORE ONLY THE MOST SYMPTOMATIC PAST EPISODE

During the times when you felt high, full of energy, or irritable did you:

	Current Episode		Past Episode	
	NO	YES	NO	YES
a Feel that you could do things others couldn't do, or that you were an especially important person? If YES, ASK FOR EXAMPLES. <small>THE EXAMPLES ARE CONSISTENT WITH A DELUSIONAL IDEA. Current Episode <input type="checkbox"/> No <input type="checkbox"/> Yes Past Episode <input type="checkbox"/> No <input type="checkbox"/> Yes</small>	NO	YES	NO	YES
b Need less sleep (for example, feel rested after only a few hours sleep)?	NO	YES	NO	YES
c Talk too much without stopping, or so fast that people had difficulty understanding?	NO	YES	NO	YES
d Have racing thoughts?	NO	YES	NO	YES

M.I.N.I. 6.0.0 (October 10, 2010) (10/10/10)

8

	<u>Current Episode</u>		<u>Past Episode</u>	
e Become easily distracted so that any little interruption could distract you?	NO	YES	NO	YES
f Have a significant increase in your activity or drive, at work, at school, socially or sexually or did you become physically or mentally restless?	NO	YES	NO	YES
g Want so much to engage in pleasurable activities that you ignored the risks or consequences (for example, spending sprees, reckless driving, or sexual indiscretions)?	NO	YES	NO	YES
C3 SUMMARY: WHEN RATING CURRENT EPISODE: IF C1b IS NO , ARE 4 OR MORE C3 ANSWERS CODED YES ? IF C1b IS YES , ARE 3 OR MORE C3 ANSWERS CODED YES ?	NO	YES	NO	YES
WHEN RATING PAST EPISODE: IF C1a IS NO , ARE 4 OR MORE C3 ANSWERS CODED YES ? IF C1a IS YES , ARE 3 OR MORE C3 ANSWERS CODED YES ?				
CODE YES ONLY IF THE ABOVE 3 OR 4 SYMPTOMS OCCURRED DURING THE SAME TIME PERIOD.				
RULE: ELATION/EXPANSIVENESS REQUIRES ONLY THREE C3 SYMPTOMS, WHILE IRRITABLE MOOD ALONE REQUIRES 4 OF THE C3 SYMPTOMS.				
C4 What is the longest time these symptoms lasted?				
a) 3 days or less		<input type="checkbox"/>		<input type="checkbox"/>
b) 4 to 6 days		<input type="checkbox"/>		<input type="checkbox"/>
c) 7 days or more		<input type="checkbox"/>		<input type="checkbox"/>
C5 Were you hospitalized for these problems?	NO	YES	NO	YES
IF YES, STOP HERE AND CIRCLE YES IN MANIC EPISODE FOR THAT TIME FRAME.				
C6 Did these symptoms cause significant problems at home, at work, socially in your relationships with others, at school or in some other important way?	NO	YES	NO	YES

ARE **C3** SUMMARY AND **C5** AND **C6** CODED **YES**?

OR

ARE **C3** SUMMARY AND **C4c** AND **C6** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

	NO	YES
MANIC EPISODE		
CURRENT		<input type="checkbox"/>
PAST		<input type="checkbox"/>

Is **C3** SUMMARY CODED **YES** AND ARE **C5** AND **C6** CODED **NO** AND IS EITHER **C4b** OR **C4c** CODED **YES**?

OR

ARE **C3** SUMMARY AND **C4b** AND **C6** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **YES** TO CURRENT MANIC EPISODE, THEN CODE CURRENT HYPOMANIC EPISODE AS **NO**.

IF **YES** TO PAST MANIC EPISODE, THEN CODE PAST HYPOMANIC EPISODE AS **NOT EXPLORED**.

HYPOMANIC EPISODE

CURRENT **NO**
 YES

PAST **NO**
 YES
 NOT

EXPLORED

ARE **C3** SUMMARY AND **C4a** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **YES** TO CURRENT MANIC EPISODE OR HYPOMANIC EPISODE,
THEN CODE CURRENT HYPOMANIC SYMPTOMS AS **NO**.

IF **YES** TO PAST MANIC EPISODE OR YES TO PAST HYPOMANIC EPISODE,
THEN CODE PAST HYPOMANIC SYMPTOMS AS **NOT EXPLORED**.

HYPOMANIC SYMPTOMS

CURRENT **NO**
 YES

PAST **NO**
 YES
 NOT EXPLORED

- C7 a) IF MANIC EPISODE IS POSITIVE FOR EITHER CURRENT OR PAST ASK:
Did you have 2 or more of these (manic) episodes lasting 7 days or more (**C4c**) in your lifetime (including the current episode if present)? NO YES
- b) IF MANIC OR HYPOMANIC EPISODE IS POSITIVE FOR EITHER CURRENT OR PAST ASK:
Did you have 2 or more of these (hypomanic) episodes lasting just 4 to 6 days (**C4b**) in your lifetime (including the current episode)? NO YES
- c) IF THE PAST "HYPOMANIC SYMPTOMS" CATEGORY IS CODED POSITIVE ASK:
Did you have these hypomanic symptoms lasting only 1 to 3 days (**C4a**) 2 or more times in your lifetime, (including the current episode if present)? NO YES

D. PANIC DISORDER

(➔ MEANS : CIRCLE NO IN D5, D6 AND D7 AND SKIP TO E1)

D1	<p>a Have you, on more than one occasion, had spells or attacks when you suddenly felt anxious, frightened, uncomfortable or uneasy, even in situations where most people would not feel that way?</p> <p>b Did the spells surge to a peak within 10 minutes of starting?</p>	➔ NO	YES YES
D2	At any time in the past, did any of those spells or attacks come on unexpectedly or occur in an unpredictable or unprovoked manner?	➔ NO	YES
D3	Have you ever had one such attack followed by a month or more of persistent concern about having another attack, or worries about the consequences of the attack - or did you make a significant change in your behavior because of the attacks (e.g., shopping only with a companion, not wanting to leave your house, visiting the emergency room repeatedly, or seeing your doctor more frequently because of the symptoms)?	NO	YES
D4	During the worst attack that you can remember:		
	a Did you have skipping, racing or pounding of your heart?	NO	YES
	b Did you have sweating or clammy hands?	NO	YES
	c Were you trembling or shaking?	NO	YES
	d Did you have shortness of breath or difficulty breathing?	NO	YES
	e Did you have a choking sensation or a lump in your throat?	NO	YES
	f Did you have chest pain, pressure or discomfort?	NO	YES
	g Did you have nausea, stomach problems or sudden diarrhea?	NO	YES
	h Did you feel dizzy, unsteady, lightheaded or faint?	NO	YES
	i Did things around you feel strange, unreal, detached or unfamiliar, or did you feel outside of or detached from part or all of your body?	NO	YES
	j Did you fear that you were losing control or going crazy?	NO	YES
	k Did you fear that you were dying?	NO	YES
	l Did you have tingling or numbness in parts of your body?	NO	YES
	m Did you have hot flushes or chills?	NO	YES
D5	ARE BOTH D3 , AND 4 OR MORE D4 ANSWERS, CODED YES ? IF YES TO D5, SKIP TO D7.	NO	YES <small>PANIC DISORDER LIFETIME</small>
D6	IF D5 = NO, ARE ANY D4 ANSWERS CODED YES ? THEN SKIP TO E1 .	NO	YES <small>LIMITED SYMPTOM ATTACKS LIFETIME</small>

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F. SOCIAL PHOBIA (Social Anxiety Disorder)

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO AND MOVE TO THE NEXT MODULE)

F1	In the past month, did you have persistent fear and significant anxiety at being watched, being the focus of attention, or of being humiliated or embarrassed? This includes things like speaking in public, eating in public or with others, writing while someone watches, or being in social situations.	➔ NO	YES
----	---	---------	-----

F2	Is this social fear excessive or unreasonable and does it almost always make you anxious?	➔ NO	YES
----	---	---------	-----

F3	Do you fear these social situations so much that you avoid them or suffer through them most of the time?	➔ NO	YES
----	--	---------	-----

F4	Do these social fears disrupt your normal work, school or social functioning or cause you significant distress?		
----	---	--	--

SUBTYPES

Do you fear and avoid 4 or more social situations?

If YES Generalized social phobia (social anxiety disorder)

If NO Non-generalized social phobia (social anxiety disorder)

EXAMPLES OF SUCH SOCIAL SITUATIONS TYPICALLY INCLUDE

- INITIATING OR MAINTAINING A CONVERSATION,
- PARTICIPATING IN SMALL GROUPS,
- DATING,
- SPEAKING TO AUTHORITY FIGURES,
- ATTENDING PARTIES,
- PUBLIC SPEAKING,
- EATING IN FRONT OF OTHERS,
- URINATING IN A PUBLIC WASHROOM, ETC.

NOTE TO INTERVIEWER: PLEASE ASSESS WHETHER THE SUBJECT'S FEARS ARE RESTRICTED TO NON-GENERALIZED ("ONLY 1 OR SEVERAL") SOCIAL SITUATIONS OR EXTEND TO GENERALIZED ("MOST") SOCIAL SITUATIONS. "MOST" SOCIAL SITUATIONS IS USUALLY OPERATIONALIZED TO MEAN 4 OR MORE SOCIAL SITUATIONS, ALTHOUGH THE DSM-IV DOES NOT EXPLICITLY STATE THIS.

NO	YES
SOCIAL PHOBIA <i>(Social Anxiety Disorder)</i> CURRENT	
GENERALIZED	<input type="checkbox"/>
NON-GENERALIZED	<input type="checkbox"/>

H. POSTTRAUMATIC STRESS DISORDER

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

H1	Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else?	➔ NO	YES
EXAMPLES OF TRAUMATIC EVENTS INCLUDE: SERIOUS ACCIDENTS, SEXUAL OR PHYSICAL ASSAULT, A TERRORIST ATTACK, BEING HELD HOSTAGE, KIDNAPPING, FIRE, DISCOVERING A BODY, WAR, OR NATURAL DISASTER, WITNESSING THE VIOLENT OR SUDDEN DEATH OF SOMEONE CLOSE TO YOU, OR A LIFE THREATENING ILLNESS.			
H2	Did you respond with intense fear, helplessness or horror?	➔ NO	YES
H3	During the past month, have you re-experienced the event in a distressing way (such as in dreams, intense recollections, flashbacks or physical reactions) or did you have intense distress when you were reminded about the event or exposed to a similar event?	➔ NO	YES

H4	In the past month:		
a	Have you avoided thinking about or talking about the event ?	NO	YES
b	Have you avoided activities, places or people that remind you of the event?	NO	YES
c	Have you had trouble recalling some important part of what happened?	NO	YES
d	Have you become much less interested in hobbies or social activities?	NO	YES
e	Have you felt detached or estranged from others?	NO	YES
f	Have you noticed that your feelings are numbed?	NO	YES
g	Have you felt that your life will be shortened or that you will die sooner than other people?	NO	YES
	ARE 3 OR MORE H4 ANSWERS CODED YES?	➔ NO	YES
H5	In the past month:		
a	Have you had difficulty sleeping?	NO	YES
b	Were you especially irritable or did you have outbursts of anger?	NO	YES
c	Have you had difficulty concentrating?	NO	YES
d	Were you nervous or constantly on your guard?	NO	YES
e	Were you easily startled?	NO	YES
	ARE 2 OR MORE H5 ANSWERS CODED YES?	➔ NO	YES
H6	During the past month, have these problems significantly interfered with your work, school or social activities, or caused significant distress?		

NO	YES
POSTTRAUMATIC STRESS DISORDER CURRENT	

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I. ALCOHOL DEPENDENCE / ABUSE

(➔ MEANS: GO TO DIAGNOSTIC BOXES, CIRCLE NO IN BOTH AND MOVE TO THE NEXT MODULE)

I1	In the past 12 months, have you had 3 or more alcoholic drinks, - within a 3 hour period, - on 3 or more occasions?	➔ NO	YES
----	---	---------	-----

I2 In the past 12 months:

- | | | | |
|---|---|----|-----|
| a | Did you need to drink a lot more in order to get the same effect that you got when you first started drinking or did you get much less effect with continued use of the same amount? | NO | YES |
| b | When you cut down on drinking did your hands shake, did you sweat or feel agitated? Did you drink to avoid these symptoms (for example, "the shakes", sweating or agitation) or to avoid being hungover?
<small>IF YES TO ANY, CODE YES.</small> | NO | YES |
| c | During the times when you drank alcohol, did you end up drinking more than you planned when you started? | NO | YES |
| d | Have you tried to reduce or stop drinking alcohol but failed? | NO | YES |
| e | On the days that you drank, did you spend substantial time obtaining alcohol, drinking, or recovering from the effects of alcohol? | NO | YES |
| f | Did you spend less time working, enjoying hobbies, or being with others because of your drinking? | NO | YES |
| g | If your drinking caused you health or mental problems, did you still keep on drinking? | NO | YES |

ARE 3 OR MORE I2 ANSWERS CODED YES?

* IF YES, SKIP I3 QUESTIONS AND GO TO NEXT MODULE. "DEPENDENCE PREEMPTS ABUSE" IN DSM IV TR.

NO	YES*
ALCOHOL DEPENDENCE CURRENT	

I3 In the past 12 months:

- | | | | |
|---|---|----|-----|
| a | Have you been intoxicated, high, or hungover more than once when you had other responsibilities at school, at work, or at home? Did this cause any problems?
<small>(CODE YES ONLY IF THIS CAUSED PROBLEMS.)</small> | NO | YES |
| b | Were you intoxicated more than once in any situation where you were physically at risk, for example, driving a car, riding a motorbike, using machinery, boating, etc.? | NO | YES |
| c | Did you have legal problems more than once because of your drinking, for example, an arrest or disorderly conduct? | NO | YES |
| d | If your drinking caused problems with your family or other people, did you still keep on drinking? | NO | YES |

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ARE 1 OR MORE 13 ANSWERS CODED YES?

NO	YES
<i>ALCOHOL ABUSE</i>	
CURRENT	

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J. SUBSTANCE DEPENDENCE / ABUSE (NON-ALCOHOL)

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

Now I am going to show you / read to you a list of street drugs or medicines.			
J1	a In the past 12 months, did you take any of these drugs more than once, to get high, to feel elated, to get "a buzz" or to change your mood?	➔	NO YES

CIRCLE EACH DRUG TAKEN:

Stimulants: amphetamines, "speed", crystal meth, "crank", "rush", Dexedrine, Ritalin, diet pills.

Cocaine: snorting, IV, freebase, crack, "speedball".

Narcotics: heroin, morphine, Dilaudid, opium, Demerol, methadone, Darvon, codeine, Percodan, Vicodin, OxyContin.

Hallucinogens: LSD ("acid"), mescaline, peyote, psilocybin, STP, "mushrooms", "ecstasy", MDA, MDMA.

Phencyclidine: PCP ("Angel Dust", "Peace Pill", "Tranq", "Hog"), or ketamine ("Special K").

Inhalants: "glue", ethyl chloride, "rush", nitrous oxide ("laughing gas"), amyl or butyl nitrate ("poppers").

Cannabis: marijuana, hashish ("hash"), THC, "pot", "grass", "weed", "reefer".

Tranquilizers: Quaalude, Seconal ("reds"), Valium, Xanax, Librium, Ativan, Dalmane, Halcion, barbiturates, Miltown, GHB, Roofinol, "Roofies".

Miscellaneous: steroids, nonprescription sleep or diet pills. Cough Medicine? Any others?

SPECIFY THE MOST USED DRUG(S): _____

WHICH DRUG(S) CAUSE THE BIGGEST PROBLEMS?: _____

FIRST EXPLORE THE DRUG CAUSING THE BIGGEST PROBLEMS AND MOST LIKELY TO MEET DEPENDENCE / ABUSE CRITERIA.

IF MEETS CRITERIA FOR ABUSE OR DEPENDENCE, SKIP TO THE NEXT MODULE. OTHERWISE, EXPLORE THE NEXT MOST PROBLEMATIC DRUG.

J2 **Considering your use of (NAME OF DRUG / DRUG CLASS SELECTED), in the past 12 months:**

a	Have you found that you needed to use much more (NAME OF DRUG / DRUG CLASS SELECTED) to get the same effect that you did when you first started taking it?	NO	YES
b	When you reduced or stopped using (NAME OF DRUG / DRUG CLASS SELECTED), did you have withdrawal symptoms (aches, shaking, fever, weakness, diarrhea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable, or depressed)? Did you use any drug(s) to keep yourself from getting sick (withdrawal symptoms) or so that you would feel better?	NO	YES
IF YES TO EITHER, CODE YES.			
c	Have you often found that when you used (NAME OF DRUG / DRUG CLASS SELECTED), you ended up taking more than you thought you would?	NO	YES
d	Have you tried to reduce or stop taking (NAME OF DRUG / DRUG CLASS SELECTED) but failed?	NO	YES
e	On the days that you used (NAME OF DRUG / DRUG CLASS SELECTED), did you spend substantial time (>2 HOURS), obtaining, using or recovering from the drug, or thinking about the drug?	NO	YES
f	Did you spend less time working, enjoying hobbies, or being with family or friends because of your drug use?	NO	YES
g	If (NAME OF DRUG / DRUG CLASS SELECTED) caused you health or mental problems, did you still keep on using it?	NO	YES

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ARE 3 OR MORE J2 ANSWERS CODED YES?

SPECIFY DRUG(S): _____

* IF YES, SKIP J3 QUESTIONS, MOVE TO NEXT DISORDER.
"DEPENDENCE PREEMPTS ABUSE" IN DSM IV TR.

NO	YES *
SUBSTANCE DEPENDENCE CURRENT	

Considering your use of (NAME THE DRUG CLASS SELECTED), in the past 12 months:

- J3 a Have you been intoxicated, high, or hungover from (NAME OF DRUG / DRUG CLASS SELECTED) more than once, when you had other responsibilities at school, at work, or at home? Did this cause any problem?
- (CODE YES ONLY IF THIS CAUSED PROBLEMS.)
- b Have you been high or intoxicated from (NAME OF DRUG / DRUG CLASS SELECTED) more than once in any situation where you were physically at risk (for example, driving a car, riding a motorbike, using machinery, boating, etc.)?
- c Did you have legal problems more than once because of your drug use, for example, an arrest or disorderly conduct?
- d If (NAME OF DRUG / DRUG CLASS SELECTED) caused problems with your family or other people, did you still keep on using it?

NO YES

NO YES

NO YES

NO YES

ARE 1 OR MORE J3 ANSWERS CODED YES?

SPECIFY DRUG(S): _____

NO	YES
SUBSTANCE ABUSE CURRENT	

K. PSYCHOTIC DISORDERS AND MOOD DISORDER WITH PSYCHOTIC FEATURES

ASK FOR AN EXAMPLE OF EACH QUESTION ANSWERED POSITIVELY. CODE **YES** ONLY IF THE EXAMPLES CLEARLY SHOW A DISTORTION OF THOUGHT OR OF PERCEPTION OR IF THEY ARE NOT CULTURALLY APPROPRIATE. BEFORE CODING, INVESTIGATE WHETHER DELUSIONS QUALIFY AS "BIZARRE".

DELUSIONS ARE "BIZARRE" IF: CLEARLY IMPLAUSIBLE, ABSURD, NOT UNDERSTANDABLE, AND CANNOT DERIVE FROM ORDINARY LIFE EXPERIENCE.

HALLUCINATIONS ARE SCORED "BIZARRE" IF: A VOICE COMMENTS ON THE PERSON'S THOUGHTS OR BEHAVIOR, OR WHEN TWO OR MORE VOICES ARE CONVERSING WITH EACH OTHER. THE PURPOSE OF THIS MODULE IS TO EXCLUDE PATIENTS WITH PSYCHOTIC DISORDERS. THIS MODULE NEEDS EXPERIENCE.

			BIZARRE
		Now I am going to ask you about unusual experiences that some people have.	
K1	a	Have you ever believed that people were spying on you, or that someone was plotting against you, or trying to hurt you? <small>NOTE: ASK FOR EXAMPLES TO RULE OUT ACTUAL STALKING.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K2	a	Have you ever believed that someone was reading your mind or could hear your thoughts, or that you could actually read someone's mind or hear what another person was thinking?	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K3	a	Have you ever believed that someone or some force outside of yourself put thoughts in your mind that were not your own, or made you act in a way that was not your usual self? Have you ever felt that you were possessed? <small>CLINICIAN: ASK FOR EXAMPLES AND DISCOUNT ANY THAT ARE NOT PSYCHOTIC.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K4	a	Have you ever believed that you were being sent special messages through the TV, radio, internet, newspapers, books, or magazines or that a person you did not personally know was particularly interested in you?	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K5	a	Have your relatives or friends ever considered any of your beliefs odd or unusual? <small>INTERVIEWER: ASK FOR EXAMPLES. ONLY CODE YES IF THE EXAMPLES ARE CLEARLY DELUSIONAL IDEAS NOT EXPLORED IN QUESTIONS K1 TO K4, FOR EXAMPLE, SOMATIC OR RELIGIOUS DELUSIONS OR DELUSIONS OF GRANDIOSITY, JEALOUSY, GUILT, RUIN OR DESTITUTION, ETC.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do they currently consider your beliefs strange?	NO YES YES
K6	a	Have you ever heard things other people couldn't hear, such as voices? IF YES TO VOICE HALLUCINATION: Was the voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO YES YES NO YES
	b	IF YES OR YES BIZARRE TO K6a: have you heard sounds / voices in the past month? IF YES TO VOICE HALLUCINATION: Was the voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO YES YES NO YES YES ↳K6b

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K7 a Have you ever had visions when you were awake or have you ever seen things other people couldn't see? NO YES

CLINICIAN: CHECK TO SEE IF THESE ARE CULTURALLY INAPPROPRIATE.

b IF YES: have you seen these things in the past month? NO YES

CLINICIAN'S JUDGMENT

K8 b IS THE PATIENT CURRENTLY EXHIBITING INCOHERENCE, DISORGANIZED SPEECH, OR MARKED LOOSENING OF ASSOCIATIONS? NO YES

K9 b IS THE PATIENT CURRENTLY EXHIBITING DISORGANIZED OR CATATONIC BEHAVIOR? NO YES

K10 b ARE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA, E.G. SIGNIFICANT AFFECTIVE FLATTENING, POVERTY OF SPEECH (ALOGIA) OR AN INABILITY TO INITIATE OR PERSIST IN GOAL-DIRECTED ACTIVITIES (AVOLITION), PROMINENT DURING THE INTERVIEW? NO YES

K11 a ARE 1 OR MORE « a » QUESTIONS FROM K1a TO K7a CODED YES OR YES BIZARRE AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT, RECURRENT OR PAST)
OR
MANIC OR HYPOMANIC EPISODE, (CURRENT OR PAST) CODED YES?

NO YES
↳ K13

IF NO TO K11 a, CIRCLE NO IN BOTH 'MOOD DISORDER WITH PSYCHOTIC FEATURES' DIAGNOSTIC BOXES AND MOVE TO K13.

b You told me earlier that you had period(s) when you felt (depressed/high/persistently irritable).

Were the beliefs and experiences you just described (SYMPTOMS CODED YES FROM K1a TO K7a) restricted exclusively to times when you were feeling depressed/high/irritable?

IF THE PATIENT EVER HAD A PERIOD OF AT LEAST 2 WEEKS OF HAVING THESE BELIEFS OR EXPERIENCES (PSYCHOTIC SYMPTOMS) WHEN THEY WERE NOT DEPRESSED/HIGH/IRRITABLE, CODE NO TO THIS DISORDER.

IF THE ANSWER IS NO TO THIS DISORDER, ALSO CIRCLE NO TO K12 AND MOVE TO K13

NO	YES
MOOD DISORDER WITH PSYCHOTIC FEATURES	
LIFETIME	

K12 a ARE 1 OR MORE « b » QUESTIONS FROM K1b TO K7b CODED YES OR YES BIZARRE AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT)
OR
MANIC OR HYPOMANIC EPISODE, (CURRENT) CODED YES?

NO YES

IF THE ANSWER IS YES TO THIS DISORDER (LIFETIME OR CURRENT), CIRCLE NO TO K13 AND K14 AND MOVE TO THE NEXT MODULE.

NO	YES
MOOD DISORDER WITH PSYCHOTIC FEATURES	
CURRENT	

K13 ARE 1 OR MORE « b » QUESTIONS FROM K1b TO K6b, CODED **YES BIZARRE**?
OR
ARE 2 OR MORE « b » QUESTIONS FROM K1b TO K10b, CODED **YES** (RATHER THAN **YES BIZARRE**)?
AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	YES
PSYCHOTIC DISORDER CURRENT	

K14 IS **K13** CODED **YES**
OR
ARE 1 OR MORE « a » QUESTIONS FROM K1a TO K6a, CODED **YES BIZARRE**?
OR
ARE 2 OR MORE « a » QUESTIONS FROM K1a TO K7a, CODED **YES** (RATHER THAN **YES BIZARRE**)
AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	YES
PSYCHOTIC DISORDER LIFETIME	

N. GENERALIZED ANXIETY DISORDER

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

N1	a	Were you excessively anxious or worried about several routine things, over the past 6 months? IN ENGLISH, IF THE PATIENT IS UNCLEAR ABOUT WHAT YOU MEAN, PROBE BY ASKING (Do others think that you are a “worry wart”?) AND GET EXAMPLES.	➔ NO	YES
	b	Are these anxieties and worries present most days?	➔ NO	YES
		ARE THE PATIENT’S ANXIETY AND WORRIES RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?	➔ NO	YES
N2		Do you find it difficult to control the worries?	➔ NO	YES
N3		FOR THE FOLLOWING, CODE NO IF THE SYMPTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORED PRIOR TO THIS POINT. When you were anxious over the past 6 months, did you, most of the time:		
	a	Feel restless, keyed up or on edge?	NO	YES
	b	Have muscle tension?	NO	YES
	c	Feel tired, weak or exhausted easily?	NO	YES
	d	Have difficulty concentrating or find your mind going blank?	NO	YES
	e	Feel irritable?	NO	YES
	f	Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	NO	YES
		ARE 3 OR MORE N3 ANSWERS CODED YES?	➔ NO	YES
N4		Do these anxieties and worries disrupt your normal work, school or social functioning or cause you significant distress?		

NO YES

GENERALIZED ANXIETY DISORDER CURRENT

O. RULE OUT MEDICAL, ORGANIC OR DRUG CAUSES FOR ALL DISORDERS

IF THE PATIENT CODES POSITIVE FOR ANY CURRENT DISORDER ASK:

Just before these symptoms began:

- O1a Were you taking any drugs or medicines? No Yes Uncertain
- O1b Did you have any medical illness? No Yes Uncertain

IN THE CLINICIAN’S JUDGMENT: ARE EITHER OF THESE LIKELY TO BE DIRECT CAUSES OF THE PATIENT’S DISORDER?
IF NECESSARY ASK ADDITIONAL OPEN-ENDED QUESTIONS.

- O2 **SUMMARY:** HAS AN ORGANIC CAUSE BEEN RULED OUT? No Yes Uncertain

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Appendix E: Tests of Homoscedasticity

Figure 8
Homoscedasticity of Age

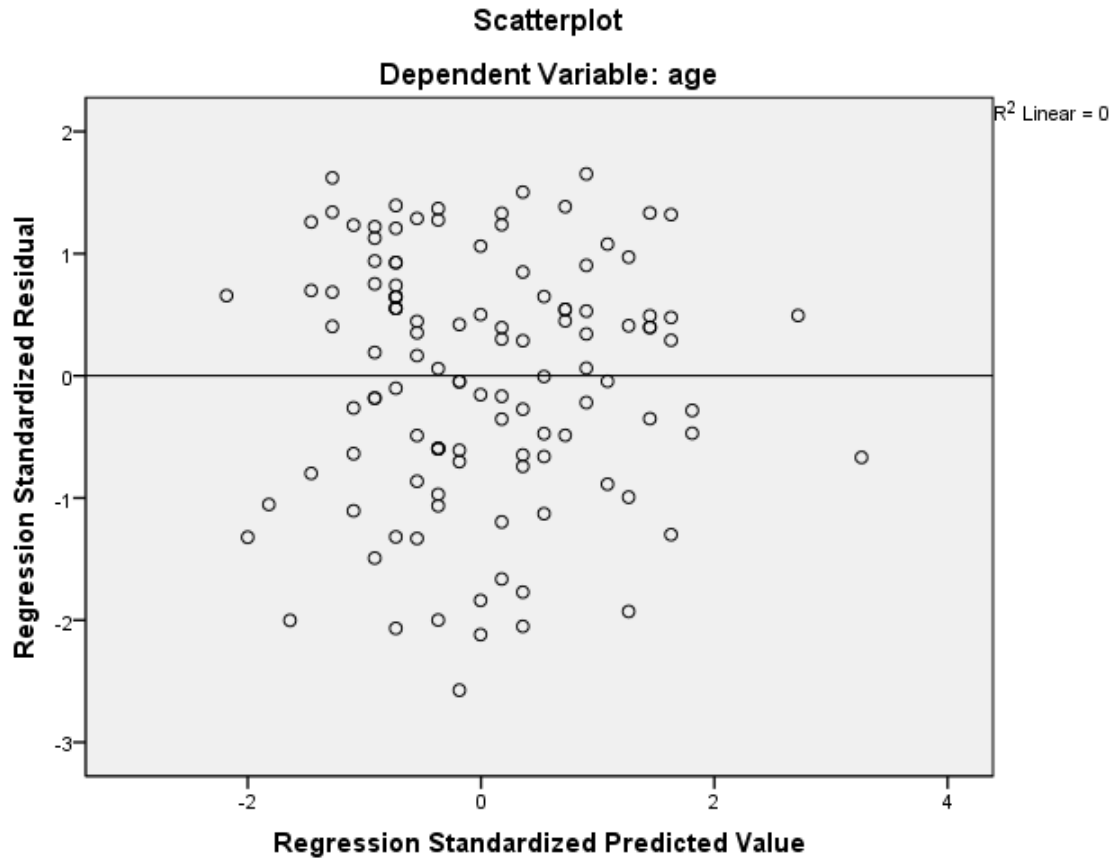


Figure 9
Homoscedasticity of Baseline Depression Scores

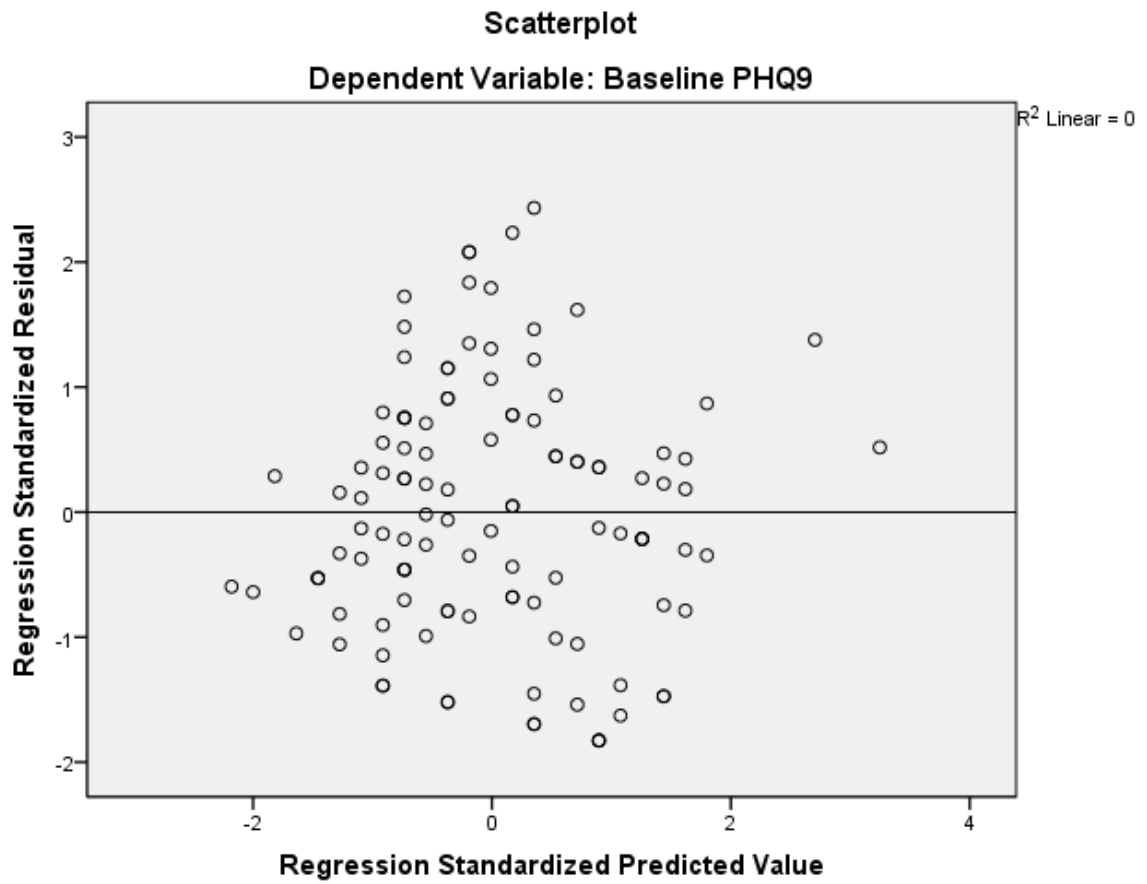


Figure 10
Homoscedasticity of Baseline Acculturation Scores

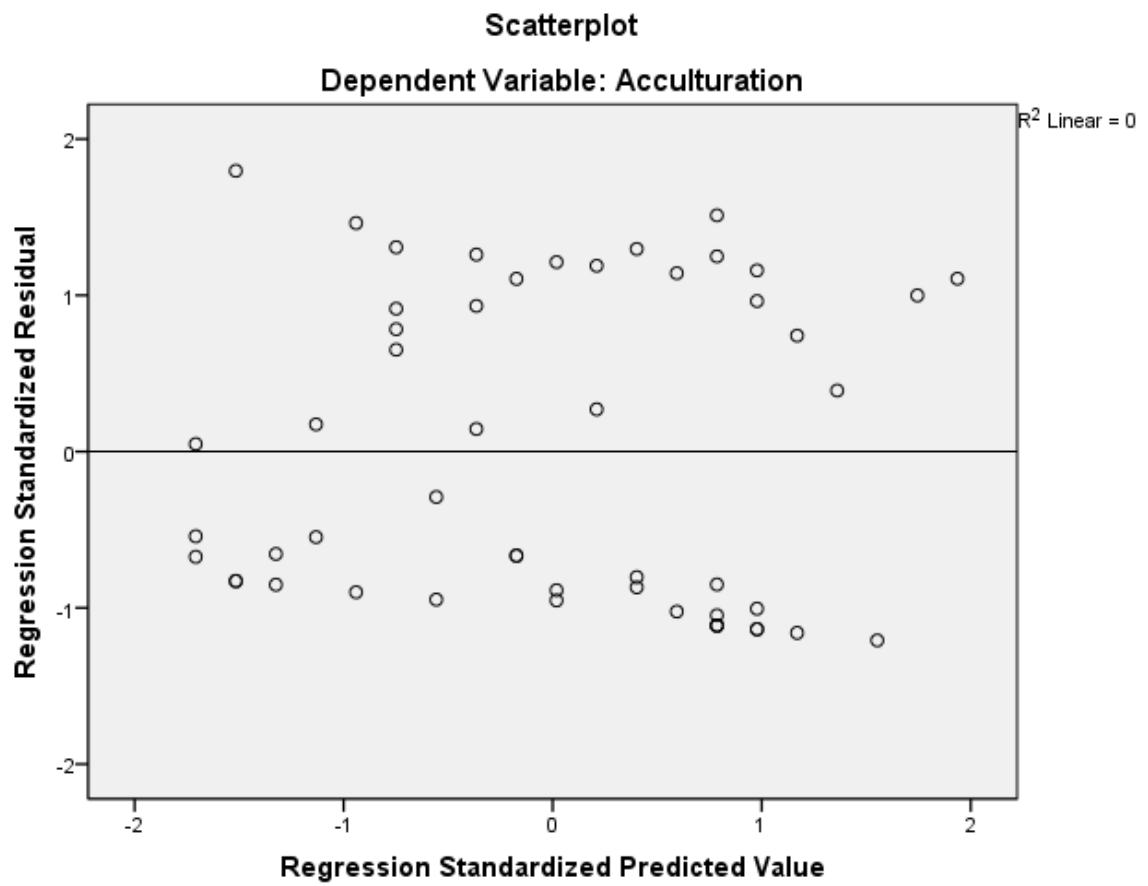


Figure 11
Homoscedasticity of Baseline Self-efficacy Scores

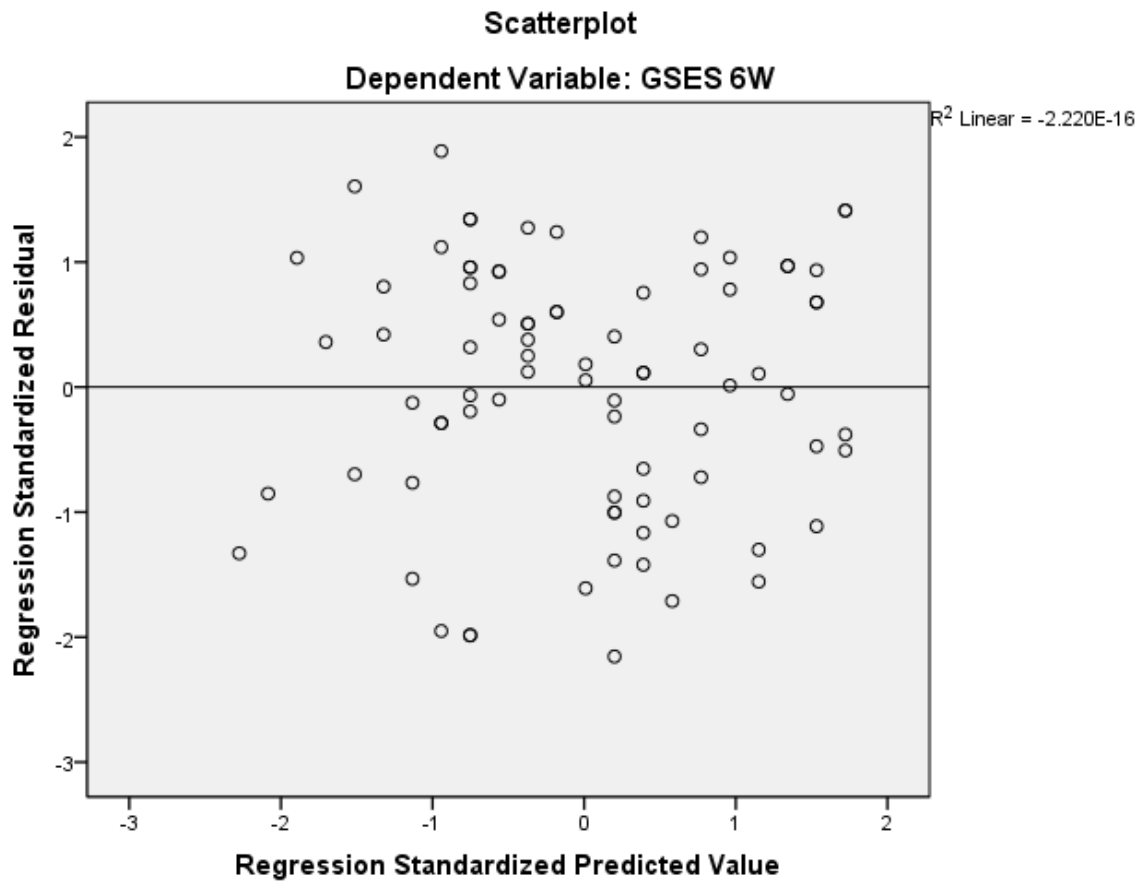


Figure 12
Homoscedasticity of Baseline Treatment Expectancy Scores

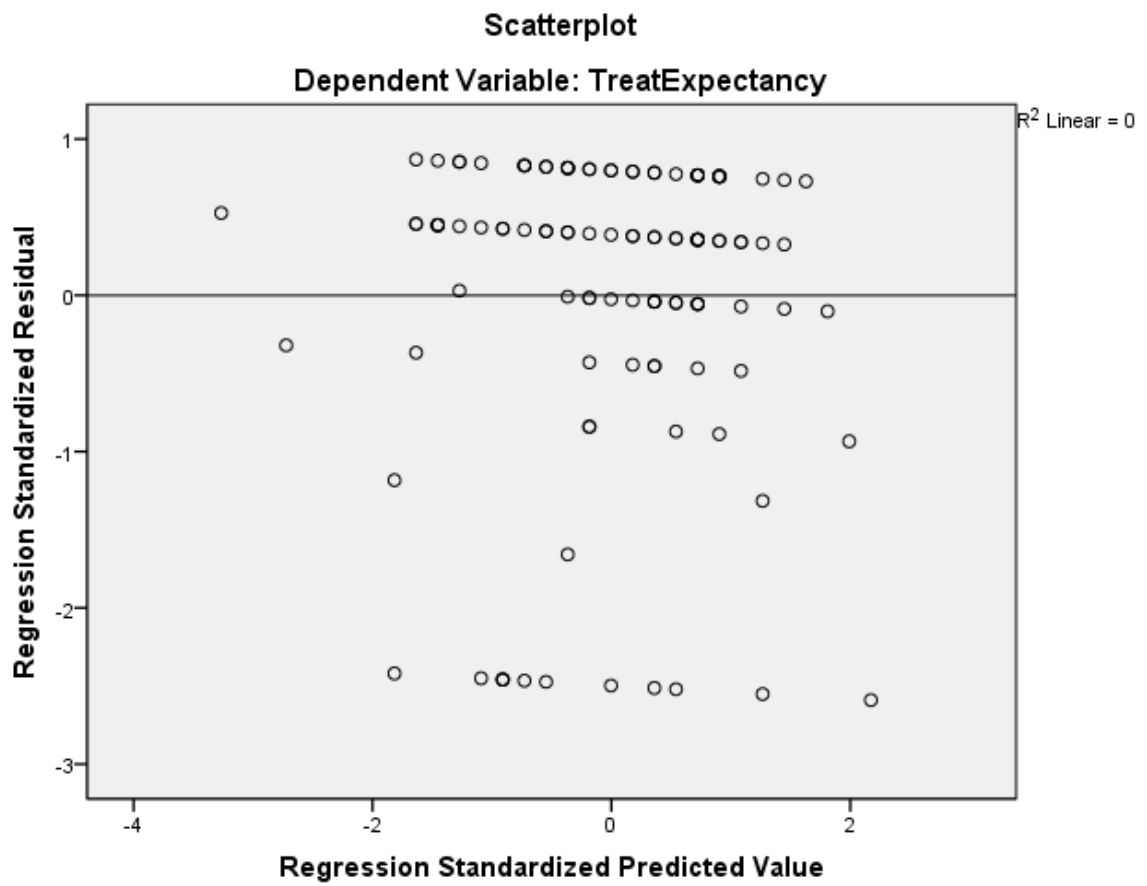


Figure 13
Homoscedasticity of Attrition Rates

