An Examination of Characteristics of Clients who Complete and Those who Drop Out of Dialectical Behavior Therapy

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Abstract

This study examines the relationship between several variables and dropout in an outpatient Dialectical Behavior Therapy (DBT) psycho-educational skills group in a community mental health setting. Treatment completion was defined as completing all of the DBT skills training modules twice. Variables examined included Demographic Variables, Feelings of Empowerment, Quality of Life, Symptom Distress, First Assigned Module, Percent of First Module Completed, Total Percent of Sessions Attended, and Completion of all Modules Once. Cramer’s V and Pearson r correlations were analyzed, and found that all clients who attended 50% or less of their first module did not successfully complete treatment. None of the other independent variables were significantly related to DBT treatment completion. Optimism, Percent of First Module completed, Empowerment, and Self-esteem/Self-efficacy are all significantly correlated with Completion of all Modules Once. Clients who did not complete at least 64% of their first module did not complete all modules once. Percent First Module and Optimism were correlated with Percent of Total Sessions attended. Self-Esteem/Self-Efficacy was significantly positively correlated with Percent of First Module Completed. A multiple regression prediction equation was constructed with Quality of Life as the dependent variable, and found that Race, living situation, and optimism accounted for 29% of the variability in Quality of Life. Limitations of the study and implications for clinicians are discussed, as well as suggestions for future research.
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Chapter 1: Introduction

1.1 Statement of the Problem

For years, clinicians have struggled to help clients with debilitating personality disorders organize the chaos in their lives into a meaningful and manageable existence. One of the most difficult diagnoses to work with, Borderline Personality Disorder (BPD) is characterized by labile moods, chronic interpersonal conflicts, and engagement in impulsive and harmful behaviors, such as non-suicidal self-injury (NSSI; APA, 2000). An arduous and often unrewarding task, working with this population can often lead to clinician burnout and disengagement. One of the major problems in working with clients diagnosed with BPD is treatment compliance. Due to the nature of the disorder, it is difficult for clients with this diagnosis to successfully engage in mental health treatment.

Dialectical Behavior Therapy, (DBT) introduced by Marsha Linehan 1993, is one of few empirically supported treatments for BPD. DBT, utilizing dialectical theory, cognitive behavioral therapy, and Zen practice, focuses on helping clients to change their thoughts and behaviors while accepting themselves and their situations. DBT includes rigorous skills training groups, homework activities, between session phone coaching, and individual sessions. Standard DBT was developed specifically for clients with BPD in outpatient settings. DBT treatment has been adapted for other settings, and for clients afflicted with a variety of diagnoses other than BPD. However, it should be noted that these implementations are speculative, and the only population that been empirically researched is female clients with BPD who have a history of NSSI (Linehan, 1993). The
efficacy of this treatment with this specific population has been supported in several randomized controlled trials (RCT’s) comparing DBT with treatment as usual (TAU). (Linehan, Heard, & Armstrong, 1993; Linehan et. al., 1999; Linehan et al., 2002). These RCT’s have included a comparison control group of treatment by therapists considered experts in treating personality disorders, and have included patients struggling with Axis I diagnoses as well as BPD (Chen et al., 2008; Linehan et al., 2006). Regardless, the efficacy of DBT treatment over TAU for diagnoses other than BPD remains questionable, and continued research is needed to replicate these findings.

There is also very little research available specifically on DBT in community mental health settings. Comtois et al. (2007) completed a study of twenty-four subjects in an outpatient community mental health center (CMHC), incorporating aspects of DBT case management, and administrative team meetings. After one year’s time, participants decreased ER visits, NSSI, and overall utilization of crisis services. The researchers emphasized the significant amount of money that was saved by keeping these patients from frequently using crisis mental health services. Nevertheless, there were several modifications to this implementation of DBT. One of the major modifications was the addition of ‘DBT case management,’ in which patients were assigned a caseworker to help them with issues regarding housing, financial aid, etc. This access to resources in the community may have decreased symptom distress in many clients, thus decreasing use of crisis services and NSSI behaviors regardless of DBT treatment.

There is also little information available on DBT and treatment dropout; although predictors of treatment dropout in general may be applied to this research study. Many symptoms that are associated with BPD are also correlated with treatment non-
compliance. Impulsive behaviors, emotional distress, and interpersonal problems have been found to be predictors of non-compliance in other studies, and these factors could also be major predictors of dropout in DBT (Connelly, Piper, de Carufel & Debbane, 1986; Erwin et al., 2003; Moeller et al., 2001). Unfortunately, clients with BPD may already be non-compliant due to these symptoms, and it may be more difficult to identify the variables that may lead to dropout specifically in DBT treatment.

The available research demonstrates some indication that engagement in DBT is a protective factor against dropout. In many of the aforementioned RCT’s, DBT predicted better retention rates and greater reductions of NSSI in comparison with TAU, and in some the dropout rate was twice as high in the TAU compared to the DBT group (Linehan et al., 2006; Verheul, et al., 2003). However, because patients were assigned to either a TAU or a DBT group, patients may have perceived DBT treatment as more effective and valuable, and therefore may have been more likely to remain in treatment.

When properly implemented and maintained, DBT may be a beneficial tool in community mental health treatment for clinicians and mental health administrators struggling to manage clients with this debilitating illness. More research must be developed to support the implementation of DBT in community mental health and to delineate the specific therapeutic elements in DBT treatment that are correlated with a decrease in mental health symptoms. A dearth of research exists on dropout from DBT skills training in a community setting, and this can be a significant limitation in providing services to the community. If clinicians are unable to keep clients in treatment, they will be unable to provide successful outcomes for these clients, regardless of the effectiveness of the treatment. This study sought to provide preliminary research and employed a
predictive approach to the problem. By examining several variables correlated specifically with dropout in DBT skills training, it may be possible to better predict client risk for dropout; and intervene to prevent premature termination.

1.2 Purpose of the Study

The purpose of this study was to explore the variables related to treatment dropout in clients enrolled in an outpatient DBT skills training program in a CMHC. Clients who successfully completed DBT skills training were compared with clients who terminated early on several variables. These variables included race, socioeconomic status (SES), level of education, symptom distress, quality of life, marital status, empowerment, completion of all modules once, and first assigned DBT skills module. This study was descriptive in nature and was analyzed using multivariate procedures and non-parametric statistics.

1.3 Significance of the Study

The anticipated implications for this study included considerations specifically for DBT in community mental health settings. If variables can be identified as significant predictors of premature termination, clinicians can use this information to recognize clients at risk for dropout in the future. The findings of this study also have implications for future research. For example, if clients with low self-esteem/self-efficacy are more likely to dropout, an exploration of the specific factors in DBT that are related to this variable can be studied further. Finally, this study could have implications for DBT programs in other CMHC’s. Perhaps the variables found to predict treatment compliance could lead to changes in implementation of outpatient DBT programs.
1.5 Research Questions

Research questions covered three general areas: demographic variables, psychosocial variables, and treatment variables. The following questions were addressed:

Research Question 1: Is there a correlation between DBT clients’ demographic characteristics and DBT skills group completion?

Research Question 2: Is there a correlation between DBT skills group completion and feelings of empowerment, quality of life, and symptom distress?

Research Question 3: Is there a difference between clients who complete DBT skills group and clients who do not complete skills group based on their first assigned skills training module, and percentage of this module attended?

Research Question 4: Can demographic variables, psychosocial variables, percent first module attended, and first assigned module predict which clients are more likely to complete all modules once, the total percent of sessions attended, or the clients who successfully complete DBT skills group?

1.6 Research Methodology

Although this was a correlational ex post facto study, the design was a static-group comparison (Campbell & Stanley, 1963). An experimental group was utilized, (subjects who drop out of treatment) as well as a control group (subjects who remain in treatment). However, these groups were not manipulated by the researcher, and were only measured following the naturally occurring treatment dropout.
After obtaining Institutional Review Board approval to conduct this study, subjects were identified by the DBT therapists at a local CMHC. Clients were assigned to two groups, those who did not complete treatment, and those who were considered graduates by the DBT treatment team. The Adult Outcomes Measure (AOM) data for these clients was collected and separated based on these groups. The AOM are completed for every client at the CMHC upon admission, and at least three months following admission. These measures provided the majority of the data related to the variables in the aforementioned research questions. The AOM scores used in this study were from the first administration of the AOM upon admission. This is because some of the responses on the scales could change after engaging in DBT treatment (i.e. symptom distress,) and it may be more difficult to get AOM scores after a client has dropped out of DBT treatment, or completed DBT treatment, especially if the client is no longer receiving services at the CMHC. Data from the AOM are stored electronically, as this information is already collected and entered into an electronic data file by CMHC employees. The researcher furnished criterion to the agency IT department, and they provided the researcher with the appropriate anonymous data set. The researcher then coded this into SPSS 19 for analysis.

1.7 Definition of Terms

*Dialectical Behavior Therapy (DBT)*

Developed by Marsha Linehan, (1993) DBT is a treatment modality developed specifically for clients with Borderline Personality Disorder. DBT includes aspects of cognitive and behavioral approaches, dialectical theory, and Zen practices.
**Treatment Dropout**

Treatment dropout can be defined as ceasing a prescribed course of treatment without the agreement of the therapist (Stone & Rutan, 1984). Linehan had two definitions related to treatment compliance in DBT. Linehan (1993) describes premature termination in DBT as missing four consecutive weeks of treatment; however she also defines successful completion of DBT skills training as completion of all modules twice. For the purpose of this study, treatment dropout was defined as a client who does not complete all DBT skills modules twice.

**Borderline Personality Disorder (BPD)**

A personality disorder delineated by the Diagnostic and Statistical Manual of Mental Disorders, (DSM-IV-TR; 2000) BPD is characterized by labile moods, chronic interpersonal conflicts, and engagement in impulsive and harmful behaviors, such as non-suicidal self-injury.

**Non Suicidal Self Injury (NSSI)**

This term refers to any physical harm an individual inflicts on him or herself without the intention of suicide. This may include inflicting cuts or burns on oneself, or ingesting poisonous or foreign objects (Klonsky, 2007).

**Treatment as Usual (TAU)**

Treatment as usual refers to the modality, frequency, and intensity a patient would normally receive for a medical or psychological condition.
Adult Outcomes Measure (AOM)

The Adult Outcomes Measure (AOM) was developed from various existing assessments to measure client progress on several variables. These variables include symptom distress, quality of life, and feelings of empowerment. The AOM were created to evaluate community mental health services provided under the Ohio Department of Mental Health (ODMH).

Treatment Module

A treatment module in DBT refers to a set of weekly psycho-educational group sessions. In DBT, there are four modules: mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. The mindfulness module typically lasts three weeks, while the emotion regulation, distress tolerance, and interpersonal effectiveness modules typically last six weeks. To successfully complete treatment, subjects must complete all of these modules twice.
Chapter 2: Review of the Literature

2.1 Introduction

Although there is little research specifically on implementing Dialectical Behavior Therapy (DBT) in community mental health centers (CMHC’s), the studies on DBT implementation in other settings and diagnoses continue to expand. This literature review will give an overview of issues with treatment compliance in group treatment, as well as a brief introduction to Borderline Personality Disorder (BPD) and DBT. Research on the adaptations of DBT will then be reviewed, and finally, based on the available literature, the implications for DBT in CMHC’s will be discussed.

2.2 Treatment Compliance

Dropout can have serious implications for group treatment. Premature loss of group members can result in lack of group cohesion, reduced client outcomes, disillusionment of the therapist, and other client dropouts (Joyce, Piper, Ogrodniczuk & Klein, 2007; Roth, 1990). This problem is extremely wide in scope, and it is difficult to narrow down statistics on the frequency of its occurrence. Further, level of compliance varies based on the type of treatment offered and clients’ personal characteristics. Although there are no general statistics regarding treatment non-compliance in mental health treatment as a whole, Wierzbicki and Pekarik (1993) conducted a meta-analysis of research studies throughout various types of treatment, and found an overall dropout rate of 47%. Other studies support this dropout rate specifically in group treatment settings (Klein & Carroll, 1986). In a study on increasing compliance in group therapy,
researchers found a 30% dropout rate even after extensive screening and preparing clients for treatment (Lothstein, 1978). Regardless of the specific numbers, it is clear dropout is a significant problem that clinicians and researchers alike have been working to address for several decades.

Although therapy dropout is a pervasive problem regardless of diagnosis, this problem is especially prevalent in clients diagnosed with BPD. Although research suggests that involvement in DBT may reduce treatment dropout in this population, few studies have actually been conducted on the variables related to compliance with DBT treatment (Linehan et al., 2006; Verheul, et al., 2003).

There is evidence of correlations between demographic factors and treatment dropout. Age is one of these demographic variables. Several studies have found a relationship between younger age and treatment dropout (McMurran, Huband, & Overton, 2010; Wierzbicki & Pekarik, 1993). One study examined 139 clients in an outpatient group treatment for grief. Researchers found that the association between age and dropout differed based on the type of treatment received. Younger clients were more likely to dropout in supportive, interpersonal group therapy; conversely, there was no relationship between age and dropout in interpretive, cognitive group therapy. Both groups had the same dropout rate of 30%. Researchers postulated that this could be due to younger clients viewing interpretive therapy as more useful than supportive therapy. These results may be promising with specific regard to compliance with DBT skills groups. DBT skills groups do not take an interpersonal approach but a psycho-educational approach regarding cognitive behavioral skills; therefore younger clients may be more engaged in treatment. Nevertheless, this study focused only on patients coping
with grief, and identified age simply as patients under the age of forty, and patients over forty years of age (Ogrodniczuk et al., 2006).

Other studies have delineated more specific relationships between age and dropout. In a five year study of group treatment for alcohol dependent patients, researchers conducted a survival analysis, and found that overall dropout rates were higher for patients who were 35 years old or younger (Monras & Gaul, 2000). This study only included alcohol dependent patients, and there were twice as many men than women, which limits the generalizability of the results. A similar study of cognitive behavioral group treatment for anger management was conducted over a three year period. Researchers found that 19% of clients ages 16-25 completed treatment, compared to 37% of clients 34 and older (Hird, Williams, & Markham; 1997). Unfortunately, gender was not reported in this study, and many of the clients were referred to treatment due to legal reasons, and this may have an effect on the results.

When relating this research on age and treatment dropout to the current study, it should be noted that research suggests that clients diagnosed with personality disorders experience a decrease in symptoms as they age. For example, a review of several longitudinal studies of clients diagnosed with BPD found that most clients did not meet criteria for BPD after forty years of age (Paris, 2002). Therefore, it may be difficult to discern whether age has a relationship with treatment dropout, or simply has a relationship with symptom severity, which may be correlated with treatment dropout (Gunderson et al., 2006).

Level of education appears to have a relationship with group treatment dropout (McMurran et al., 2010; Wierzbicki & Pekarik, 1993). In one study of 54 women
survivors of sexual abuse, 22 (44%) of the subjects dropped out. The researchers compared those who completed group therapy and those who did not, and found that 68% of dropouts did not complete high school, as opposed to only 41% of completers (Fisher, Winne, & Ley, 1993). Another study of clients with dual diagnoses of substance dependence and bipolar disorder found that lack of college education predicted treatment dropout (Graff, Griffin, & Weiss, 2008). The sample consisted of 61 participants, and 49% reported attaining a college degree, although only 20% dropped out of the 12 week program, which is much lower than the reported dropout rate of many other substance treatment programs (Daley & Zuckoff, 1999). However, while education was a predictor of treatment dropout in this study, employment status and income were not. In many studies, socioeconomic status (SES) has been considered a factor in treatment compliance, and lower levels of income seem to be associated with higher levels of treatment dropout (Rabin, Kaslow, Rehn; 1985). In the aforementioned study of women survivors of sexual abuse, 92% of participants who completed had maintained employment, compared to 59% of those who dropped out. Clearly, it is difficult to discern whether SES and level of education are correlated with treatment dropout, or perhaps instead, as with age, they are correlated with other variables that are correlated with treatment dropout.

Symptom severity may be described as the extent to which the subject experiences the symptoms of his or her mental illness. The available research is unclear as to whether high or low symptom severity is correlated with problems with treatment compliance. In a two year longitudinal study of 160 subjects with BPD, clients with higher symptom severity and history of child sexual abuse experienced poorer outcomes.
than other clients in the study. (Gunderson et al., 2006). In a qualitative research study of clients diagnosed with BPD, subjects who terminated prematurely reported struggling to manage intense emotions in group and struggling to manage relationships with other clients and with the therapist (Hummelen, Wilberg, & Karterud, 2007). Unfortunately, there were only eight subjects in this study, and more research is needed to verify these findings.

Other studies have found conflicting results. One study examined 60 women with BPD in a 12 week inpatient DBT program. The researchers found that higher levels of ‘trait anxiety’, as measured by the State-Trait Anxiety Inventory, predicted dropout. In this same study, lower instances of lifetime suicide attempts also predicted dropout (Rüsch et al., 2008). One might argue that lower amount of suicide attempts would also be related to lower symptom severity. Regardless, this research increases the difficulty in discerning which factors account for the most variance in treatment dropout.

There is very little research on minority clients and treatment compliance. Most, if not all, of the studies discussed in this text involved samples that consisted mostly of Caucasian subjects. The majority of the data that is available is derived from similar studies. For example, in a study of premature termination that included 681 subjects, only 22 of these subjects were considered minorities; however, the researchers reported minority status as a risk factor for dropout. As we know very little about these 22 subjects other than that they are minorities, and we do not know their specific race, this may be a broad conclusion (Arnow et al., 2007). There are meta-analyses that have reviewed several studies and consistently found minority status as a risk factor for dropout; although, again, these studies were conducted with mostly Caucasian subjects (Lothstein,
One study that focused specifically on treatment compliance with male domestic violence offenders included 40 African-American males and 61 Caucasian males. Researchers found that race accounted for a significant amount of the variance in treatment dropout (Taft, Murphy, Elliot, & Keaser, 2001). Regardless, male domestic violence offenders are a limited population for generalizations, and it is clear that more research is needed regarding minority status and treatment dropout.

Unfortunately, each study reviewed in this section focused on a different treatment modality and population, which places extreme limitations on the ability to generalize these results to the current study. This is a major limitation of studies on treatment compliance in general. Researchers often simply compare those who complete and those who dropout on any number of variables, as opposed to systematically exploring possible predictors of dropout. This not only places limitations on the research, but it remains unclear exactly how these variables are related and whether any of them definitively predict dropout across diagnoses and treatment modalities (Heppner, Kivlighan, & Wampold, 1992).

2.3 Borderline Personality Disorder

Clients diagnosed with BPD are plagued by unstable relationships, labile moods, unstable sense of self, and impulsivity. Many clients diagnosed with BPD also engage in non suicidal self injury (NSSI), and are afflicted with chronic feelings of emptiness, fear of abandonment, and difficulty controlling anger (APA, 2000). As with most clients with personality disorders, it is difficult for mental health professionals to successfully manage the symptoms of BPD. For example, in one preliminary study of patients on a long-term psychiatric care unit, clients with BPD were more likely to be diagnosed with mood
disorders, to engage in life threatening behaviors, and to spend less time in between hospitalizations than patients without a BPD diagnosis. (Brundage, 2009). Many traditional modalities of treatment (e.g. interpersonal therapy and process groups,) have been found to be less effective in reducing symptoms in clients with BPD. One study examined interpersonal group treatment for women with PTSD related to childhood sexual abuse. The researchers separated subjects into three groups- one without any members with BPD, one group with at least one member with BPD, and a control group (wait list). Researchers found that while the group without members with BPD showed improvements in anger and depression, the other two groups did not. In fact, the group with members with BPD actually experienced an increase in anger. Although causal conclusions cannot be made from this study, the researchers postulated the ‘contagion’ effect had taken place in the groups with members with BPD- perhaps a member with BPD reacted angrily toward other group members, and these members in turn experienced an increase in anger (Cloitre & Koenen, 2001).

There are many theories as to the etiology of BPD. Linehan (1993) postulates a biosocial model of BPD, and believes there are biological factors as well as environmental factors. This theory states that clients with BPD biologically experience pervasive emotion dysregulation. These clients struggle with more intense emotions than others, and they have more difficulty regulating these emotions. The theory also states that clients with BPD were raised in an invalidating environment. Clients may have been told that they were not experiencing the emotions they felt, or that they were wrong to be experiencing their emotions. Linehan believes that the interaction of these factors leads to dysregulation in all parts of one’s life, and eventually a diagnosis with BPD. This theory
has merit, although there will always be exceptions. Clients may experience both of these factors and not be diagnosed with BPD; similarly, clients can be diagnosed with BPD without experiencing these factors. Further, there are many other theories as to the cause of BPD, and it is still not completely clear what causes this disorder.

2.4 Overview of Dialectical Behavior Therapy

DBT is a structured treatment program that involves weekly individual and group treatment interventions. DBT encompasses a blend of cognitive behavioral and behavioral approaches, with a foundation in Zen practice and dialectical philosophy. There are four stages of treatment, including pre-treatment, attaining basic capacities (skills training,) reducing posttraumatic stress, and increasing self respect and achieving individual goals (Linehan, 1993). The skills training stage of DBT typically lasts about one year, although a client can be engaged in therapy for several years, and may even decide to re-visit skills training as needed. Clients spend a significant amount of time in pre-treatment orientation with an individual therapist, where behavioral targets and therapy intervening behaviors are addressed, before they are committed to DBT. Group meetings are psycho-educational, and focus on the four skills modules: Mindfulness, Interpersonal Effectiveness, Emotion Regulation, and Distress Tolerance. DBT therapists engage in a significant amount of training, and learn very specific strategies to manage clients, including dialectical, validating, and problem solving strategies. DBT trainings are only offered to treatment teams, as DBT therapists need a significant amount of support, and several clinicians are needed to implement DBT successfully. Traditional DBT treatment comprises of 60-90 minutes weekly individual therapy sessions and weekly 120 minute group treatment sessions. Clients are required to complete weekly
diary cards, as well as weekly homework assignments (Linehan, 1993). Inter-session phone coaching is encouraged, with several contingency management procedures in place (Ben-Porath, 2004; Ben-Porath & Koons, 2005). Although this description is quite brief, it delineates the complexities of the treatment, and the time commitment by clients and clinicians alike.

2.5 Research on Dialectical Behavior Therapy

2.5.1 Randomized controlled trials. Several randomized controlled trials (RCT’s) have been conducted on DBT and women diagnosed with BPD who struggle with NSSI. The first of these RCT’s compared one year of DBT treatment to one year of treatment as usual (TAU) (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). At the end of treatment, clients not only exhibited lower rates of NSSI and anger, but clients also experienced an increase in daily functioning and social functioning. There were many limitations to this initial study, including small sample size (N=44). An independent research team at Duke University sought to replicate these findings, and conducted an RCT of 25 female veterans diagnosed with BPD, although these patients exhibited lower symptom acuity than those included in Linehan et al.’s RCT’s. Subjects were referred through the women’s outpatient medical clinic at a local Veteran’s Affairs Hospital. Researchers compared DBT to TAU over a six month period, and found that DBT produced significantly better outcomes with regard to hopelessness, depression, anger, and suicidal ideations. There were no differences between the groups in NSSI and hospitalizations, and researchers stated that this could be because recent NSSI were not a requirement of inclusion in this study, although it was a requirement in other published
RCT’s. Other limitations in this study include the small sample size, and that the subjects in this study were specifically veteran women (Koons et al., 2001).

Another independent research team sought to repeat positive outcomes with DBT internationally. In an RCT in Holland, patients were recruited from local mental health and drug treatment centers, and then assigned either to DBT or to TAU at the location from which they were referred. Subjects in the DBT group experienced significant reductions in NSSI and impulsive behaviors and were more likely to stay in treatment than the TAU group (Verheul et al., 2003). There are significant limitations to the validity of these results. Patients assigned to the DBT group received standard DBT, which consists of several hours of skills training and treatment each week. Subjects in the TAU group received on average, two sessions of treatment per month. In addition, the therapists in the DBT group were volunteers, and received intense DBT training, whereas the training of the clinicians in the TAU group is unknown. Finally, patients may have been more invested in DBT treatment because they were aware they were receiving the experimental treatment in the study. For example, in another study, researchers found that clients perceive DBT as more effective and appealing than other outpatient treatments, and this attitude was correlated with positive outcomes, making it difficult to discern whether DBT was truly more effective (Weitzman, 2008). These limitations may affect both the validity and generalizability of the results.

In 2006, Linehan et al. published a larger study with more rigorous controls to replicate the results of the initial RCT published in 1991. In this study, DBT treatment was compared to Community Treatment by Experts, (CTBE) or TAU from clinicians who are considered experts in the field. Subjects (N= 101) were assigned to either DBT
or CTBE, and the study was conducted over a one year period with a one year follow up period. Subjects in both groups experienced improvements, and there was no significant difference between groups with regard to NSSI. Regardless, subjects in the DBT group were half as likely to attempt suicide, used significantly less crisis services, and NSSI behaviors were significantly less medically dangerous. CTBE was not significantly higher than DBT on any of the measures; although it would be helpful if these results were replicated do solidify these findings. Data from this study was also analyzed for differences with regard to Axis I diagnoses. The only significant difference between the two groups was that subjects in the DBT group reported higher rates of sobriety and longer periods of sobriety than those in the CTBE group (Harned et al., 2008). The expert therapists chosen for the CTBE were not necessarily substance abuse therapists. These therapists were considered experts when working with ‘difficult patients’ and this difference could have an effect on the results of this study.

In 1999 and in 2002, RCT’s were conducted to study female patients diagnosed with co-morbid BPD and substance use disorders. In both studies, patients in a DBT group were compared to a TAU group for one year’s time, with relatively small sample sizes (N=28 and N=24). These studies had mixed results. In 1999, no between-group differences emerged for NSSI, global adjustment, or social adjustment during treatment; although clients in DBT showed significant improvements in global and social adjustment four months post treatment. Urine drug screen results favored DBT, but were not significant (Linehan, Schmidt, Dimeff, Craft, Kanter, & Comtois). In the 2002 study, subjects were patients with BPD and opiate dependence, and DBT was compared to Comprehensive Validation Therapy (CVT) a therapy that encompasses validation
strategies, but not cognitive behavioral change strategies that are utilized in DBT (Linehan et al.). Both groups experienced a decrease in substance use, and there were no significant differences between the groups in NSSI. The CVT group had a 100% retention rate, while DBT had only a 74% retention rate. Patients in the DBT group had a significantly lower proportion of positive drug screens over the course of treatment. Due to the mixed results elicited in these studies, more research is necessary regarding the effectiveness of DBT with clients co-morbidly diagnosed with substance disorders over TAU.

2.5.2 Other research studies and implications

There are many aspects of DBT that have yet to be extensively studied. For example, there is little longitudinal data on the outcomes of DBT treatment. In the aforementioned RCT that compared DBT and CTBE, the positive effects of DBT did remain statistically significant over the year following treatment (Linehan et al., 2006). In one of the only other studies that measured the long-term effects of DBT, researchers followed 31 subjects diagnosed with BPD up to two years after completion of a three month inpatient (IP) DBT treatment. The inpatient DBT program decreased NSSI and hospitalizations in comparison to the control condition of patients an unspecified outpatient therapy. Unfortunately, the control group was not tested longitudinally. Further, the original treatment group comprised of 40 participants, although 9 subjects terminated prematurely, and these subjects simply were not included in the data analysis which may limit these findings. The follow up assessment measures found that positive outcomes persisted despite the two year time lapse since DBT treatment, and that
symptoms continued to improve in the two years following treatment (Bohus et al., 2004; Kleindienst et al., 2008).

DBT is a complex treatment with many facets, and the mechanisms of change remain unclear. This is also an aspect of DBT that merits further study. The interplay of client engagement, skills learned, and therapist strategies seem to promote positive change; nonetheless, it is unclear exactly how these mechanisms work (Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006). Clients report that one helpful aspect of DBT is the structure, including the specific guidelines and expectations (Arminta, 2000). The lives of clients diagnosed with BPD are often chaotic, and the consistency and stability of DBT may be a relief from this chaos.

As with most therapies, the therapeutic relationship is an essential factor in DBT treatment. Clients have cited their relationship with their therapist as extremely helpful during DBT treatment. Further, therapists reported that how they presented and modeled behaviors to clients were also important factors (Arminta, 2000). It is still unclear exactly how the therapeutic mechanisms in DBT work, and this aspect merits further exploration.

2.6 Adaptations to Dialectical Behavior Therapy

With the positive studies that have been published regarding DBT, many researchers have implemented DBT with a variety of client populations and settings. Some of these adaptations may be promising, although more data is needed before a determination can be made that DBT is more beneficial than TAU for populations other than female clients with BPD who struggle with NSSI in an outpatient setting.
2.6.1 Setting adaptations

There is preliminary research on DBT adaptations in many settings. For example, information has been published on steps for implementing DBT on inpatient (IP) units. Authors state that DBT on IP units should include specific protocol for handling suicidal behaviors, skills training, behavioral interventions, and team consultation. Behavioral targets on IP units focus on the behaviors that led to the hospitalization and increase the length of stay, and this may vary from behavioral targets in outpatient DBT treatment. Treatment teams are encouraged to be flexible and to adhere to contingency management procedures. Staff training in behaviorism is paramount, and patients are engaged in procedures to analyze their behaviors and make relationship repairs as needed (Swenson, Sanderson, Dulit, & Linehan, 2001). As discussed previously, Bohus et al. (2004) conducted a study of short-term DBT treatment on an IP unit of 31 women with BPD, and the data showed a reduction in hospitalizations and NSSI upon follow up that appeared to last two years following treatment. The main limitations of this study were that the subjects elected to receive this treatment, and the treatment length was three months. Most patients on IP units are hospitalized due to NSSI or actual suicide attempts, and the average length of stay for crisis stabilization may be much shorter. In another study of DBT on an IP unit where the length of stay averaged 12-13 days, researchers compared participants in a daily group that focused on DBT skills, and participants in a daily group that discussed relevant issues, but was not as structured and was more focused on group process (N=31). Results showed no differences between the groups on symptom improvement, and subjects in the DBT skills group actually engaged in more acting out behaviors than subjects in the process group (Springer, Lohr, Buchtel, & Silk,
1996). More research may be helpful to solidify the data on implementing DBT in hospital settings.

A few published studies have examined DBT in an intensive outpatient (IOP) setting. In one study, researchers engaged clients in a daily six hour DBT treatment. Clients were involved in groups and skills training throughout the day, and attendance in the program was a minimum of five days. Although most clients met several criteria for BPD, this diagnosis was not a mandatory requirement for inclusion in treatment. After discharge, clients were stepped down to at least six months of outpatient DBT treatment. Unfortunately, there is no experimental evidence regarding the effectiveness of this approach (Simpson et al., 1998). The second study focused on a short-term, intensive outpatient approach for clients with BPD who were in acute crisis. Treatment lasted three weeks and included individual therapy and group treatment sessions. Post-treatment assessments found a significant decrease in feelings of depression and hopelessness, and this short-term version of DBT elicited very high client retention rates (McQuillan et al., 2005). However, it should be noted that a post-test with more time between the end of treatment and testing would be helpful to determine if these improvements were lasting.

2.6.2 Client Population Adaptations

2.6.2.1 Adolescents. DBT with adolescents may have the most research in favor of its effectiveness. Adolescents who engage in high risk behaviors and are at greater risk for suicidal behaviors have been targeted for treatment (Miller, Rathus, & Linehan, 2007). Although adolescents cannot be diagnosed with personality disorders, many adolescents struggle with symptoms of BPD, including impulsivity, chronic emotion dysregulation, labile moods, and unstable interpersonal relationships. These symptoms
can lead to higher risk of suicide; when implemented correctly, DBT may be helpful in managing these symptoms (Miller et al., 2000; Miller et al., 2007). Although DBT with adolescents is similar to regular DBT, modifications to better suit their needs are necessary. The main focus in this adaptation is balancing change and acceptance, creating a structured environment, and generalizing treatment skills to all areas of the client’s life. This is similar to that of DBT for adults, although behavioral targets include problem behaviors at school and managing relationships with family members (Miller, 1999; Miller et al., 2007). As the involvement of parents is important when working with any adolescent and preliminary research suggests it increases compliance in adolescents in DBT, parental engagement is a main focus, as well as the transactional relationship between the adolescent and the family (Miller, Glinski, Woodberry, Mitchell, & Indik, 2002; Woodberry, Miller, Glinski, Indik, & Mitchell, 2002).

In a comparison of pre and post-test evaluations of 27 adolescents who engaged in DBT treatment, clients reported a significant increase in ability to use coping skills and a decrease in mental health symptoms. Clients also reported the skills that were most helpful for them were distress tolerance and mindfulness. If replicated, these results can have implications for this treatment modification. If distress tolerance and mindfulness skills are the most helpful, perhaps these are the skills that should be focused on in treatment. It should be noted that this study did not use a control group, and instead elicited self report of skills by subjects; therefore, it does not support the effectiveness of DBT for adolescents over TAU (Miller et al., 2000). In a study of the feasibility of using DBT for adolescents on an IP unit, 62 subjects were assigned to DBT skills training groups or TAU, which comprised of daily psychodynamic treatment groups. Although
subjects in the DBT group exhibited significantly fewer behavioral problems than the TAU group, there were no significant differences between subjects on symptom improvement one year after hospitalization, as both groups maintained significant symptom improvement (Katz, Cox, Gunasekara, & Miller, 2004).

Other studies have altered DBT for adolescents diagnosed with bipolar disorder, precipitating higher levels of functioning and lower levels of NSSI and depressive symptoms. This treatment included a family skills training approach as well as individual DBT treatment and had a very high rate of treatment compliance, although the sample was quite small (N=10; Goldstein, Axelson, Birmaher, & Brent, 2007). A similar study that also included family skills training with DBT skills training for adolescents compared DBT treatment (n=29) with TAU (n=82). TAU again was a psychodynamic approach, with weekly family treatment. Self–report data showed that clients had significantly reduced suicidal ideations and psychiatric symptoms in the DBT group in comparison to TAU, despite the fact that subjects in the DBT group reported higher symptom severity at the beginning of the study. These improvements could be due to the novelty of DBT treatment as opposed to treatment as usual, and the measures were all self-report, which also could limit these findings (Rathus & Miller, 2002).

2.6.2.2 Family adaptations. As with most DBT adaptations, research on DBT with family interventions is preliminary. One adaptation, the Family Connections program, was developed specifically for family members of clients with BPD. The program used a psycho-educational approach to educate family members about BPD, and implemented several aspects of DBT skills training, including mindfulness, acceptance, and interpersonal effectiveness. Family skills training included all family members, and
recipients reported an increase in knowledge of DBT skills, as well as decreases in feelings of grief and burden with regard to the family member struggling with BPD (Hoffman, Fruzzetti, & Swenson, 1999).

DBT also has been altered as a group intervention for couples with one member who has been diagnosed with BPD. In a preliminary study of this adaptation, the skills training group for couples focused on emotion regulation, problem solving, and communication skills to facilitate the quality of the relationship. Results showed not only improvements in emotion regulation skills in both parties, but also improvements in satisfaction and confidence in ability to use DBT skills (Kirby & Baucom, 2007). These findings are limited, as the partner with BPD must have completed one year of DBT treatment to be included in this treatment, and participants volunteered for this treatment. The individuals may already have been motivated to engage in treatment, and therefore, they may have experienced more positive results. In addition, although both of these studies show positive results in family skills training, they do not evidence that DBT skills training is better for families than other family intervention modalities. The evidence supporting family based interventions with DBT continues to grow; however, overall efficacy in this adaptation remains uncertain.

2.6.3 Axis I Diagnoses.

There is preliminary research on DBT with clients diagnosed with only Axis I disorders, or co-occurring Axis I disorders and BPD. Some of this evidence supports the use of DBT as an effective treatment for these disorders, although other studies have found that DBT is no more effective than treatment by community experts for clients diagnosed with depression, anxiety, and eating disorders (Harned et al., 2008).
2.6.3.1 Eating Disorders. Several studies have examined the treatment of eating disorders via DBT. The limited amount of research has shown promising results. Although the majority of research has focused on binge-eating disorder, studies have also shown symptom reduction with bulimia and anorexia nervosa as well (Astrachan-Fletcher & Maslar, 2009; Chen & Safer, 2010; Safer, Telch, & Agras, 2001; Telch, Agras & Linehan, 2000; Wiser & Telch, 1999). There are many similarities in the impulsive behaviors in BPD and the impulsivity involved in eating disorders; therefore, the structure and skills training modules in DBT are helpful in treating this population. Adaptations include adding treatment targets to address disordered eating behavior, discussing dialectical theory with specific focus on eating behaviors, and including skills modules on nutrition and health (Wisniewski & Kelly, 2003). In one study of treating binge-eating disorder with DBT, abstinence from disordered eating was 89% at discharge, although abstinence was reduced to 56% at six month follow up (Telch, Agras, Linehan, 2001). Further research is needed to adapt this treatment to elicit longer rates of abstinence.

Research has shown that clients struggling with an eating disorder diagnosis and BPD suffer from higher levels of distress and difficulties regulating emotions than those diagnosed only with an eating disorder. In one study, researchers examined an intensive outpatient (IOP) approach to treating eating disorders with DBT. In this study, researchers compared patients who were co-morbidly diagnosed with BPD and an eating disorder with those who were only diagnosed with an eating disorder. Clients engaged in this program for an average of 73 days, and at the end of the program, all clients self reported a reduction in anxiety and depressive symptoms, as well as eating disordered
behavior. Further, clients with co-morbid diagnoses had no significant differences in ability to regulate emotions in comparison with clients with one diagnosis, which provides promising data in support of an IOP approach to treating eating disorders with DBT (Ben-Porath, Wisniewski, & Warren, 2009). There were limitations to this study. The data was self reported, and there is no extended data on the lasting effect of this treatment. In addition, the average length of stay in this program may be less feasible for most patients with regard to insurance coverage and costs. In a similar study of clients with co-morbid diagnoses of eating disorders and BPD, researchers implemented standard outpatient DBT with minimal adaptations for eating disorders. Although participants in this study experienced reductions in symptoms of disordered eating and emotion dysregulation, the sample size consisted of only 8 subjects, and there was no control group included in this study (Chen, Matthews, Allen, Kuo, & Linehan, 2008).

Modifications of DBT for clients with eating disorders may be applicable for adolescents as well as adults (Etre, 2008). Preliminary studies have focused on adolescents diagnosed with anorexia and bulimia. In a small study of 12 adolescents engaged in a 25 week outpatient DBT program for eating disorders, clients exhibited a significant decrease in disordered eating and mental health symptoms (Klinkowski, Pfeiffer, Lehmkuhl, & Korte, 2007). Regardless of age, these studies suggest that DBT may be an effective treatment of eating disorders.

**2.6.3.2 Substance Use Disorders.** DBT adaptations for substance use disorders have been studied as well. As discussed earlier, in one RCT data analysis of Axis I diagnoses, subjects diagnosed with a co-morbid substance abuse disorder significantly reduced substance use behaviors and increased abstinence the DBT treatment group in
comparison with the CTBE. Again, a limitation to this data is that the CTBE may not have been specifically designed for substance use disorders (Harned et al., 2008).

Similarly, researchers analyzed the data from the RCT conducted by Van Den Bosch et al. (2002) to examine substance abuse behaviors of subjects struggling with substance dependence. Although subjects reported decreased symptoms of BPD, they did not report difference between DBT and TAU with regard to substance abuse behaviors (Van Den Bosch, Verheul, Schippers, & Van Den Brink, 2002).

In another adaptation, Holdcraft & Comtois (2002) applied DBT in a dual diagnosis treatment program for women. The community reinforcement approach (CRA) was implemented in conjunction with DBT. The community reinforcement approach is a treatment modality in which therapists help subjects find behavioral reinforcement in their social, recreational, and vocational outlets. The focus of DBT treatment in this adaptation was on contingency management and skills training. Clients were assigned to one of two tracks: emotion dysregulation, which was a two year DBT treatment for clients with mood related disorders, or the cognitive disorders track, which had no time limitation and was for clients who struggled with schizophrenia, learning disabilities, and other cognitive disorders. Results showed that at the end of one year, clients experienced a significant decrease in hospitalizations and a significant increase in sobriety. Unfortunately, there was no control group in this study to compare this treatment with others, and is unclear the degree to which DBT alone accounted for the variance in these improvements. Although some of these studies are promising, further research is needed to verify DBT’s effectiveness in reducing substance abuse in comparison to TAU.
2.6.3.3 Depression. Although the data on DBT treatment with depression is less extensive than other diagnoses, there is research that suggests DBT is helpful with this population. In one study of a 16-week outpatient DBT treatment for subjects with depression, respondents reported significantly fewer symptoms of depression at the end of this study in comparison to subjects in the wait-list control group. Regardless, results of this study are preliminary, and would need to be replicated with comparisons to TAU for the effectiveness of this adaptation to have significant support (Feldman, 2009). Another study specifically examined subjects who continued to experience depression after taking medication to manage symptoms. Patients were divided into a wait-list control group, and a DBT group which included 16 weekly sessions using DBT skills that the researchers felt would be most applicable to Major Depressive Disorder. After the treatment, and at the 6 month post-test, subjects reported significant decreases in depression, and these findings were verified by clinician rated scales as well (Harley et al., 2008). Individuals who had previous experience in CBT treatment were excluded from this study, and all subjects continued with outside mental health treatment, which could confound these results.

Other researchers have engaged in an adaptation of DBT for elderly clients struggling with depression. In an RCT of patients 60 and older, researchers assigned clients to an anti-depressant medication only group, or an anti-depressant and DBT treatment group. DBT skills training groups were combined with scheduled phone coaching in between sessions. DBT for elderly adults was adapted to focus on behaviors related to depression and maladaptive coping patterns in older adults. At post-test, clients in the DBT treatment group reported lower levels of depression, dependency, and higher
levels of adaptive coping than the medication only control group (Lynch, Morse, & Vitt, 2002). This study is promising, although more research is needed regarding whether DBT treatment specifically is more helpful in increasing positive emotions and behaviors, or if another group treatment would also elicit similar results for elderly patients.

2.6.3.4 Forensic populations. Due to the dysfunctional personality characteristics of individuals who commit criminal offenses, DBT has been modified for treatment related to criminal offenses. Waltz (2003) discussed the application of DBT to clients who have been legally charged as domestic offenders. There are similarities between clients with BPD and this population, including labile emotions, engagement in life threatening behaviors, and poor treatment compliance. An adaptation for treatment with domestic offenders includes the focus on validation of the client, and extensive behavior analysis. Additional adaptations include a skills treatment module on increasing emotional attachment in relationships and decreasing criminal behaviors (McCann, Ball, & Ivanoff, 2000). Nee and Farman (2005) conducted a study of 30 women diagnosed with BPD in a correctional facility in the UK. Preliminary results were promising not only in the standard format of DBT, but in a shorter, 12 week implementation of DBT skills training. Clients exhibited a reduction in NSSI and impulsivity and an increase in self-esteem and coping skills, which may lead to a reduction in criminal behaviors. There were several limitations to this study, including short pretreatment orientation period and staff attrition. Rosenfeld et al. (2007) implemented a six month DBT treatment program for stalking offenders, in which all of the major facets of DBT were maintained; however, examples used were modified to fit an urban offender population. Researchers found that there was a 50% dropout rate, although those who remained in treatment were less likely
to re-offend than those who dropped out. Results need to be substantiated before DBT’s effectiveness with clients within the forensic population before they can be considered definitive.

2.7 Implementation into Community Mental Health

There are many factors that must be considered when implementing DBT into community mental health treatment centers (CMHC’s), and successful implementation may involve a significant amount of planning, research, and finances. The benefits of implementing DBT include decreasing overall community costs and increasing positive outcomes for clients diagnosed with BPD. The limitations are related to fitting treatment into existing systems, maintain fidelity of the treatment, and engaging clinicians in adequate DBT training. Both the benefits and the limitations will be discussed here, as well as other practical considerations for DBT implementation in community mental health.

2.7.1 Benefits

Positive treatment outcomes through DBT may decrease overall costs to the community with regard to reductions in use of emergency resources (Linehan & Heard, 1999). Others have reported the ability to implement DBT in a relatively short time span with reasonable costs and successful client results (Zinkler, Gaglia, Rajagopal, & Farhy, 2007). Comtois et al. (2007) completed a study of 24 subjects in an outpatient CMHC, incorporating aspects of DBT case management and administrative team meetings. After one year’s time, participants reported a decrease in ER visits, NSSI, and overall utilization of crisis services. The researchers emphasized the significant amount of money that was saved by keeping these patients from frequently using crisis mental health
services. There were several limitations to this study. Nevertheless, the positive outcomes lend support to implementation of DBT in a community mental health center.

CMHC’s may be a better venue for billing with regard to DBT, as clients treated in CMHC’s frequently receive Medicaid or Medicare, both of which are often more flexible with regard to reimbursement for treatment and session limits (Ben-porporath, Peterson, & Smee, 2004). In another preliminary investigation of DBT in a community mental health setting, 26 subjects were selected who had a history of behaviors that over utilized mental health crisis services. There was no control group in this study. Regardless, patients reported significant decreases in suicidal thoughts (Ben-porporath, Peterson, & Smee, 2004).

Although these studies are preliminary, DBT may be a cost-effective treatment of BPD in CMHC’s. By reducing psychiatric hospitalizations and emergency room visits by clients engaged in DBT treatment, the program can save the community as much $9,000 each year per client (Linehan & Heard, 1999).

2.7.2 Limitations

One limitation to DBT regardless of the adaptation is the continued need for solid empirical research to support its effectiveness. Scheel (2000) stated that while many studies reported comparisons to TAU, it is unclear what exactly ‘TAU’ means, and how much treatment the clients in this group received. In addition, many of the current studies on DBT have measured disparate variables and have elicited preliminary data with little actual solid evidence of the efficacy of the treatment. More RCT’s on DBT adaptations are needed to solidify the findings of these pilot studies.
There are many limitations to implementing DBT in a CMHC, regardless of the population of focus. Not all adaptations of DBT are effective. In a case study of a DBT adaptation by a psychiatry resident, the case ended with the client terminating prematurely, and a survey of psychiatry residents in the study reported low levels of confidence in using DBT after residency (Sharma, Dunlop, Ninah, & Bradley, 2007). As mentioned, researchers have voiced concerns about the actual efficacy of DBT in various settings, as many of the available studies on DBT vary greatly in the variables measured and the adaptation of the treatment (Martens, 2005). The only true empirical evidence for efficacy has been found with women with BPD (Robins, 2000).

Some of the major concerns regarding implementation of DBT in community mental health include staff selection and turnover, staff training, billing issues, fitting DBT into the current treatment structure, and support from administration (Ben-Porath, Peterson, & Smee, 2004; Hershell, 2009; Swenson, Torrey, and Koerner, 2002). The most salient of these issues will be discussed further in the next section.

2.7.3 Practical Issues

There are many issues to consider with regard to DBT implementation. Although some of these issues may vary by site, it is clear that mental health administrators play a significant role. It is suggested that program administrators become acquainted with the idea of DBT, including being given a clear idea of the scope of the problems that DBT was developed to address (Swenson, Torrey, & Koerner, 2002). Although administrator response to DBT is generally positive, they also voice many concerns.

One of administrators’ main concerns is funding (Ben-Porath et al., 2004; Herschell et al., 2009). Community mental health administrators may have to advocate
for the DBT program to mental health authorities and funding boards. These authorities will need to know the benefits and the costs for implementation and maintenance of a DBT program. DBT saves the community money with regard to acute care costs and use of emergency services; however, managed care reimbursement may not cover the additional costs associated with DBT for the mental health center, including between session phone coaching and therapist consultation team meetings. It is extremely important that outcome measures are tracked, for example, frequency of client hospitalizations and NSSI, to make data driven decisions about the benefits of treatment (Swenson, Torrey, & Koerner, 2002).

One of the solutions for funding could involve implementing limited aspects of DBT, for example, offering clients only group skills training without the option of intersession phone coaching (Robins, 2000). A pilot study on teaching a DBT emotion regulation to 30 clients diagnosed with BPD through an instructional video elicited positive results as clients reported the video was helpful, and 80% reported they used the skills shown in the video (Waltz et al., 2009). More research is needed on this application of DBT, as the mean IQ score in this study was higher than average, and participants were compensated in this study, which may have affected their comprehension of the skills learned.

Research suggests that DBT treatment is most beneficial when implemented with all aspects of treatment, including group treatment, individual treatment, and phone coaching (Robins, 2000). Therefore those considering DBT implementation should focus on implementing all facets of DBT treatment to maintain fidelity and increase the likelihood of positive outcomes.
Staff training is another concern (Herschell et al., 2009; Swenson et al., 2002). DBT training is offered to treatment teams, and clinicians are trained in two parts, each part consisting of five days of training, at a cost of $2,400 per clinician (Behavioral Tech, 2011). There is minimal research on clinician training in DBT. One study of 109 clinicians who received DBT training found that regardless of educational background in behavioral treatment and skills, clinicians were able to successfully master the material, including behavioral techniques and dialectical strategies (Hawkins & Sinha, 1998). However, these clinicians had already received an extensive amount of DBT training as part of a state DBT training initiative, which included on-site training as well as the standard 10 day training.

In an RCT examination of DBT training, researchers examined the responses of 109 clinicians on three different methods of training: an online multimedia training, a two day instructor led DBT workshop, or individualized training via a written treatment manual. Clinicians reported higher satisfaction with online multimedia training and instructor lead DBT workshops than the written manual, and the the online training resulted in higher levels of knowledge of the treatment than the other two measures (Dimeff et al., 2009). One limitation of this method of training is that this does not measure practical application of DBT.

An initial study of an electronic training method of clinicians found that 90% of those who used it found it helpful. The focus of the internet based training program was on mock training sessions and helping new clinicians differentiate between effective and ineffective therapeutic interventions in DBT. However, the study included 56 DBT therapists, 64% of whom reported having 36 months or more experience in DBT.
treatment. These clinicians appeared to rate this electronic approach favorably, although more research is necessary to measure the effectiveness of this training method (Worrall & Fruzzetti, 2009). With proper implementation, electronic and online methods may be a cost-effective approach to DBT trainings.

It is imperative that clinicians engaging in DBT therapy are engaged in consultation with other DBT therapists on a regular basis, and this should be considered when implementing DBT in community mental health (Linehan, 1993). Consultation is a venue for support as well as feedback in work with difficult clients. Further, it may be extremely difficult for clinicians to adhere to DBT 100% of the time, and there is little research regarding how often clinicians in new implementation programs actually adhere to the DBT approach (Robins, 2000). Consultation may help clinicians maintain the fidelity of DBT treatment. It has been suggested that not only do DBT therapists need to consult with each other, they should personally use DBT skills, for example, mindfulness practice. For therapists to be effective in helping their clients engage in mindfulness, they must also be practiced in mindfulness skills (Robins, 2002).

Another consideration in implementing DBT in community mental health involves fitting DBT into the existing treatment system (Herschell, 2009). Clients may struggle with the transition from more traditional modes of therapy to DBT, a very structured and regimented treatment (Van Den Bosch et al., 2002). It may be difficult to reconcile clients’ expectations of mental health treatment and the radical difference with regard to DBT, including the time commitments in and out of session, although these issues may be addressed during the pre-treatment commitment period (Swenson, Torrey, & Koerner, 2002). All of the available research on the topic emphasizes the importance
of administrators and clinicians working as a team to facilitate successful treatment implementation.

2.8 Conclusions

A significant amount of research has found that DBT is efficacious, and preliminary results on many other studies have shown that it can be adapted to different settings and diagnoses. However, more research is needed to solidify the efficacy of these adaptations. With the publication of RCT’s that have proven the efficaciousness of DBT with BPD, researchers and clinicians alike have been attracted to the fact DBT is “clear, “do-able”, and effective” (Swenson, Torrey, & Koerner, 2002, p. 173). Thus, many mental health professionals have begun to implement DBT skills and techniques in a mélange of settings and situations. Some adaptations have elicited positive preliminary results, for example, with eating disorders and with adolescents. Others have yet to be proven.

There are several considerations when implementing a DBT program related to clients, administrators, and clinicians, although the benefits of successfully implementing this treatment may outweigh the costs. As DBT programs continue to grow, one area of research that is important is treatment compliance. If variables can be identified as significant predictors of premature termination in DBT, clinicians can use this information to recognize at-risk clients and work to prevent dropout. This could maximize the benefits of the treatment, while minimizing risk factors for treatment non-compliance and poor outcomes. Thus, the benefits would not only be for the clients and mental health professionals working with them, but for the public at large.
Chapter 3: Methodology

3.1 Introduction

Although the amount of research on Dialectical Behavior Therapy (DBT) continues to grow, there is little research available on the application of DBT in community mental health settings. Preliminary research has found that participants in DBT experienced a decrease in use of crisis services and non-suicidal self-injury (NSSI) (Comtois et al., 2007). Further evidence is needed to validate these results, and research is also needed that focuses on treatment compliance and DBT. DBT has been shown to predict better retention rates and greater reductions of NSSI in comparison with treatment as usual (TAU). Significant improvements in retention have been reflected in the research, with two times as many dropping out in the TAU group than those in DBT in some studies (e.g. Linehan et al., 2006; Verheul et al., 2003). Despite the apparent effects of DBT on retention for psychotherapy, there is currently little other data available on treatment compliance and DBT, which is an important factor to consider when implementing DBT in a mental health agency.

Many research studies have found that labile emotions can be predictors of treatment non-compliance. Clients experiencing high levels of these emotions (i.e. clients diagnosed with borderline personality disorder (BPD)) may struggle to manage them, leading to premature dropout (Erwin, Heimberg, Schneier, & Liebowitz, 2003). Many symptoms that are associated with BPD are also correlated with treatment non-compliance. Impulsive behaviors, emotional distress, and interpersonal problems have
been found to be predictors of non-compliance in other studies, and these factors could also be major predictors of dropout in DBT (Connelly, Piper, de Carufel & Debbane, 1986; Erwin et al., 2003; Moeller et al., 2001). Unfortunately, clients with BPD may already be non-compliant due to these symptoms, and it may be more difficult to identify the variables that may lead to dropout specifically in DBT treatment.

3.2 Purpose of the Study

DBT may be helpful for many clinicians and mental health administrators struggling to manage clients with BPD. Skills group is offered during the first stage of DBT treatment, and this can be a key time in improving the intensity and frequency of symptoms related to BPD (Linehan, 1993). Although DBT skills group is only one facet of DBT treatment, analysis of dropout from skills group is important. Currently a dearth of research exists on dropout from DBT skills group in community settings. This is a significant limitation in providing services to the community. If clinicians are unable to keep clients in treatment, they will be unable to provide successful outcomes for these clients, regardless of the effectiveness of the treatment. This study sought to provide preliminary research and employed a predictive approach by examining several variables that may be correlated with DBT skills training dropout. If we can better predict clients who will dropout, then we may be able to implement interventions to prevent premature termination.

3.3 Research Questions

The following research questions were addressed:

Research Question 1: Is there a correlation between DBT clients’ demographic characteristics and DBT skills group completion?
Research Question 2: Is there a correlation between DBT skills group completion and feelings of empowerment, quality of life, and symptom distress?

Research Question 3: Is there a difference between clients who complete DBT skills group and clients who do not complete skills group based on their first assigned skills training module, and percentage of this module attended?

Research Question 4: Can demographic variables, psychosocial variables, percent first module attended, and first assigned module predict which clients are more likely to complete all modules once, the total percent of sessions attended, or the clients who successfully complete DBT skills group?

3.4 Research Design

The purpose of this study was to explore the variables related to treatment dropout of clients who were enrolled in an outpatient DBT skills group in a community mental health center. Clients who successfully completed DBT skills group were compared with clients who terminated early from DBT skills group on several variables. These variables include race, marital status, living situation, employment status, level of education, symptom distress, first assigned skills module, percentage of first module completed, and feelings of empowerment. Comparisons between these variables were also used regarding the total percent of sessions subjects attended, and whether the subjects completed all of the modules once.

This study was descriptive in nature, and the variables were analyzed using multivariate and non-parametric procedures. Although this was a correlational ex post facto study, the design was a static-group comparison, as there was an experimental group (subjects who drop out of treatment) and a control group (subjects who remain in
treatment) (Campbell & Stanley, 1963). These groups were not manipulated by the researcher and were only measured following the naturally occurring treatment dropout.

3.4.1 Setting and program description

Subjects were receiving services in a local community mental health center (CMHC) that serves the low-income population of Columbus, Ohio. While clients may receive treatment at this center for several years, the length of time spent in DBT skills training is usually one to two years. Skills training groups are offered in four modules: Interpersonal Effectiveness, Emotion Regulation, Distress Tolerance, and Mindfulness. The Interpersonal Effectiveness, Emotion Regulation, and Distress Tolerance modules last 6 weeks, Mindfulness lasts 3 weeks. After one module is completed, another is commenced the following week. New members are permitted to join any DBT skills training at the beginning of a new module. The CMHC offers two DBT groups at different locations with approximately twelve members per group. These groups are conducted weekly for two hours, both taking the same module at the same time. Weekly individual therapy sessions are not required (these sessions are often bi-weekly). Phone coaching is offered during business hours, and after hours, clients are instructed to contact local emergency mental health services.

3.4.2 Sample size.

The desired sample size was 60 participants, 30 in the treatment completion group, and 30 in the dropout group. A reasonable statistical power is considered to be .80 for a study using ANOVA and logistic regression, and for correlational, or causal comparative studies such as this one, a group size of less than 30 can cause difficulties in reaching the desired level of power. Therefore, at least 30 subjects per group is
recommended (Gay & Airasian, 2000; Hair, Black, Babin, Anderson, & Tatham, 2006). The sample size elicited was 76 subjects: 57 dropouts, and 19 graduates. However, because graduation is considered completing all skills modules twice, subjects who completed all of the skills modules once were also measured, which elicited 25 graduates and 40 dropouts. Power analysis and sample size are important factors in any research study, and the interplay of several factors were considered. These included the type of statistical test, level of significance, amount of power, and effect size (Hadley & Mitchell, 1995). Although in optimal situations, effect size would be based on prior research; there is little, if any, available research on the Adult Outcomes Measure (AOM) with adults. Therefore, a medium effect size according to Cohen (1969) was delineated, simply as a practical estimate. The optimal alpha level in this study was $p < .05$.

3.4.3 Participants

Participants in this study were all of the clients who were enrolled in DBT groups at the CMHC over the course of five years and had either completed or dropped out of treatment. Criteria for inclusion in this study included engagement in DBT skills training groups for any amount of time and completion of the AOM at least once. Clients who met these criteria were then identified as a ‘premature termination’ or ‘completion’.

3.4.5 Procedure

The AOM is completed by every client at the CMHC upon admission, and at least three months following admission. Therefore, the AOM scores that were used in this study were the scores taken upon admission to the CMHC. This is because responses on the scales may have changed after engaging in DBT treatment (i.e. symptom distress). It was also considered more difficult to get AOM scores after a client had dropped out or
completed DBT treatment, especially if the client was no longer receiving services at the CMHC. Data from the AOM are stored electronically, as this information is already collected and entered into an electronic data file by CMHC employees. The researcher furnished criteria to the agency IT department, and they proved the research with the appropriate anonymous data set. The researcher then coded this into SPSS 19 for analysis. Therapists who provide DBT at the CMHC reviewed their documentation and identified clients who were enrolled in DBT, and which module they were first assigned. Then, the clinicians identified whether these clients completed treatment or did not based on whether they completed all modules twice. These clients were separated into two groups, and this information was given to the research staff at the CMHC. All identifying information was removed from the data, and clients were assigned subject numbers. Because gender and age were not collected by the scales, and considered protected health information, these data were collected in aggregate form.

3.5 Instrumentation

3.5.1 Ohio Adult Outcomes Measure

The primary individual variables in this study were derived from the Adult Outcomes Measure (AOM; ODMH, 2008). There are two forms included in the AOM: the provider form and the consumer form. The consumer form is completed by the client and consists of 67 questions. The assessment is divided into five sections: Quality of Life, Symptom Distress Scale, Making Decisions Empowerment Scale, Safety and Health, and Demographics. The provider form consists of 12 questions, divided into two sections: safety and health, and functioning. The mental health worker who has the most interactions with the client is expected to complete the provider form based on their
knowledge of the client’s functioning and status. As the CMHC discontinued use of the provider form, it was not used in this study. The consumer form is administered to all clients upon admission, and at least three months following admission.

3.5.1.2 Consumer Form. For the purposes of this study, four of the five scales on the AOM consumer form were utilized. This included the Symptom Distress Scale, Making Decisions Empowerment Scale, and the Quality of Life Scale. The Symptom Distress scale is comprised of questions from the Symptom Checklist-10 (Nguyen, Attkisson, & Stegner, 1983) and five questions from the Anxiety Scale of the Symptom Checklist -90 (Derogatis & Cleary, 1977). Clients are asked to respond to questions regarding symptoms based on the last seven days. For example, “In the past seven days, how much were you distressed or bothered by: …” Questions are measured on a five level Likert-type scale from ‘never’ to ‘always’. Symptoms measured are related specifically to depression and anxiety, for example ‘nervousness or shakiness inside’ or ‘feeling blue’. Each possible response is given a value from one to five (never = 1; always =5). Responses are then summed, with higher scores indicating higher levels of distress. The SCL-10 has been validated against the Beck Depression Inventory as well as the Minnesota Multiphasic Personality Inventory-II, and has an internal reliability coefficient of .93 (Cronbach’s alpha; Rooney, 2008).

The Making Decisions Empowerment Scale (Rogers et al., 1997) consists of 28 questions, with five subscales including self-esteem, powerlessness, autonomy, optimism and locus of control, and righteous anger. Respondents answer questions on a five level Likert-type scale from ‘strongly agree’ to ‘strongly disagree’. Sample questions include ‘I have a positive attitude toward myself,’ ‘I am generally optimistic about the future,’
and ‘I feel powerless most of the time.’ Each possible response is given a value from one to five (never =1; always=5; except the self-esteem sub-scale, which is reverse scored). Responses are then summed within each subscale, and divided by the number of questions in that subscale. Higher scores indicate higher levels of self-esteem/self-efficacy, power, autonomy, optimism, locus of control, and righteous anger. It is suggested that the scales have validity in that they are highly correlated with other measures, and in the normative sample, respondents with known differences (for example, patients who are hospitalized or college students) had the expected differences in response (higher or lower levels of empowerment). The overall scales have a reliability coefficient of .77 (Chronbach’s alpha; Rooney, 2008).

The Quality of Life Scale (Greenley, Greenburg, & Brown; 1997) consists of twelve items, and includes a financial status subscale. Clients answer on a five level Likert-type scale on various aspects of their lives specifically in the past six months from “terrible” to “very pleased”. Sample questions include “How do you feel about the amount of friendship in your life?” and “How do you feel about the amount of money you get?” Each possible response is given a value from one to five (terrible=1; always =5). Responses are then summed on the financial status subscale and the Overall Quality of Life scale, and divided by the number of questions in both. The overall quality of life scale has a reliability coefficient of .87 (Cronbach’s alpha), and the Financial Status subscale has a reliability coefficient of .89 (Cronbach’s alpha, Rooney, 2008).

3.6 Variables

Premature termination, or dropout, in standard DBT is defined as when a client misses four consecutive weeks of treatment. This was implemented for research needs as
well as to set clear clinical boundaries (Linehan, 1993). Further, completion of DBT skills training is considered completion of all skills modules twice. This definition was upheld to maintain the fidelity of the treatment.

Clients were identified by DBT therapists via past and present client records. These clients were then placed in two groups; ‘dropout’ and ‘graduates’ (see premature termination definition under ‘dependent variable’ below).

3.6.1 Dependent Variable

3.6.1.1 Treatment Dropout. Treatment dropout was defined as clients who cease attendance before completing all of the skills modules twice. This definition of completion was delineated by Linehan (1993) and was verified by the DBT therapists. As noted previously, completion of all of the modules once was also recorded as a possible dependent variable. Treatment dropout and completion of all modules once are both categorical variables.

3.6.1.2 Percent of Total Sessions Attended. The total percent of sessions attended while enrolled in DBT skills training was also collected, not only to verify adequate completion of each module, but also as this is related to premature termination. The amount of sessions attended out of all sessions offered while the client was enrolled in skills training was counted, and the percentage of sessions actually attended was calculated. This is a continuous interval variable.

3.6.2 Independent Variables

Although there are several variables that could have been included in this study, the following variables were chosen based on past research, and whether they could be logically related to treatment non-compliance (Hair et al., 2006).
3.6.2.1 Demographics. Prior research has found that many demographic characteristics are related to treatment dropout (Baekland & Lundwall, 1975). Race, education, employment status, marital status, and current living situation were all collected via the AOM. Therapists at the CMHC provided information on age and gender in aggregate form (an age range of all clients was provided, and the total number of men and women). Race, marital status, employment status, and current living situation are categorical variables, education is an ordinal variable.

3.6.2.2 Quality of Life. An individual’s quality of life is made up of several factors, including relationships, meaningful activities, living situation, and financial situation. Although significant evidence supports a relationship between interpersonal relationships, finances, and treatment dropout, there is less evidence of a relationship between quality of life as a whole and premature treatment termination. In this study, quality of life was operationally defined as the clients’ score on the Quality of Life subscale on the AOM. The Quality of Life scale includes a financial status subscale, which specifically measures feelings about financial status. Financial status was also measured and operationalized by the respondents overall score on this subscale. The Quality of Life scale is a continuous measure on an interval scale. Possible scores range from 1.00-5.00 with a reliability change index of .8.

3.6.2.3 Feelings of Empowerment. The definition of empowerment varies, although it is specifically related to beliefs about one’s personal abilities and locus of control. This has a direct relationship with attitude toward treatment, which has been found to correlate with treatment compliance in group settings (Connelly, Piper, de Carufel, & Debbane, 1986). For this study, the operational definition of empowerment
was the respondent’s overall score on the Making Decisions Empowerment Scale (Rogers, Chamberlain, Ellison, & Crean, 1997). Within the Making Decisions Empowerment scale are five subscales: self-esteem/self-efficacy, power/powerlessness, community activism/autonomy, optimism/control over the future, and righteous anger. These variables were also measured and operationalized by the respondent’s overall scores in these subscales. The Making Decisions Empowerment scale is a continuous measure on an interval scale. Possible scores range from 1.00-4.00, with a reliability change index of .4.

3.6.2.5 Symptom Severity. Symptom severity can be defined by the amount of mental health symptoms the client experiences and the frequency and intensity to which the client experiences them. This can be a significant factor with regard to compliance with treatment (Erwin et al., 2003). In this study, symptom severity was operationally defined by the Symptom Distress subscale on the AOM. This is a continuous interval variable, with scores ranging from 15-75, with a reliability change index of 11.

3.6.2.6 First Assigned Module. The first module the client was assigned to, (Mindfulness, Interpersonal Effectiveness, Emotion Regulation, or Distress Tolerance) varied based on the date that the client began DBT treatment. This information was collected via the client record by the DBT therapists. First assigned module is a categorical variable.

3.6.2.7 Percent of First Module Completed. The percent of sessions attended in the first module the client was assigned to was considered important information to collect as it could be related to eventual premature termination. The amount of sessions
attended out of the total sessions in each module was counted, and the percentage was calculated. This is a continuous interval variable.

3.7 Data Analysis

The groups in this study were not randomized, and the independent variables will not be manipulated by the researcher, therefore, the researcher was unable to draw causal conclusions (Campbell & Stanley, 1963). Instead, data analysis was directed at describing the relationships between the independent variables and the dependent variables.

All data analyses for this study were conducted using SPSS 19 for Windows. The first step in this procedure was to collapse demographic information into meaningful groups, and to calculate the descriptive statistics and frequencies of the variables, including the means, modes, and standard deviations as appropriate (e.g. race cannot have a mean). Graphical displays of these statistics were created, including histograms and scatter plots of all of the relevant variables. This was used to confirm that none of the assumptions of the analyses that were conducted have been violated, as well as get a general idea of the data distribution. There are several assumptions that need to be considered when conducting multivariate analyses and logistic regression. Foremost, that the observations, or scores for each subject must be independent of each other. The second, homoscedasticity, is the assumption that variance in the dependent variable will be the same across each of the independent variables. This was evaluated using Levene’s statistical test for homogeneity of variance, as well as by viewing the scatterplots. It is also assumed that the data will have a normal distribution on each independent variable, which can be assessed by viewing histograms of each variable, and by evaluating the skewness (balance of the distribution left or right) and kurtosis (height of the distribution)
statistics with regard to each of the variables. It was expected that some of the variables would not be normally distributed. For example, respondents were likely to report high levels of symptom distress, as this is to be expected in clients receiving DBT (Hair et al., 2006).

Pearson correlations were calculated between all of the interval independent variables as well as the dependent variable. The Pearson correlation coefficient (r) ranges from -1.0 to 1.0, and measures the amount to which the variables are related. These correlation coefficients were considered when entering the variables into the logistic regression equation.

Since the goal of this study was to explore the relationship between one nominal dependent variable (dropout vs. graduate,) and several metric and non-metric independent variables, multivariate logistic regression was the most appropriate method of analysis (Hair et al., 2006). As there are only two levels of the dependent variable in this situation, logistic regression was a more beneficial method of multivariate data analysis than discriminant analysis. Logistic regression is “relatively robust, flexible and easily used, and it lends itself to a meaningful interpretation” (Pohar, Blas, & Turk, 2004, p. 144). Foremost, it is less affected by non-normality in the independent variables, which may be the case with some of the variables included in this study. In addition, logistic regression is more tolerant of categorical independent variables. There are several categorical independent variables in this study, including first assigned module, race, employment status, and marital status. The interpretation of the results of logistic regression is similar to that of multiple regression, which is helpful for researchers and reviewers (Hair et al., 2006). Finally, other empirical and peer-reviewed studies have used logistic regression to
predict treatment dropout, providing support for its use in the present study (Graff, Griffin, & Weiss, 2008; Rüsh et al., 2008). Although there are few limitations to using logistic regression, it is only the best choice in very specific situations that include a categorical dependent variable with only two levels, like the study described in this manuscript (Hair et al., 2006).

Respondents were coded into two groups based on the dependent variable, premature termination (0) and successful completion (1). The data were assessed for normality, linearity, and multicollinearity. First, the data were entered into the logistic regression model via block forced entry to evaluate the relationship between the independent variables and the dependent variable. Then the most parsimonious logistic regression equation was created using the variables that had the highest predictive value and the smallest amount of multicollinearity. There were also interval and continuous variables that might be predicted by the independent variables. Therefore, these variables were entered into a linear multiple regression model. They were first entered via block forced entry, and then the variables that accounted for the most variability in the dependent variable, but had the smallest amount of multicollinearity, were entered into the regression equation.
Chapter 4: Results

4.1 Descriptive Statistics

4.1.1 Demographics

The subjects included in this study were all of the participants who have engaged in DBT skills group at the community mental health center (CMHC) since its commencement in 2006. There were 76 subjects total - 57 dropouts, and 19 graduates. Seventy-two, or 95% of subjects were women, while only four were men. The age range for subjects was ages 20-35 years old.

The sample consisted of 59 (78%) white subjects, and 14 (18%) ‘not white’ subjects. Race categories were collapsed into two groups based on race, ‘white’ and ‘non-white,’ as there were few minority subjects in this study, and the information was deemed more meaningful when comparing the dominant culture to the non-dominant culture. As illustrated in Table 1, among the graduates, 3 (16%) were considered ‘not white’ while 15 (79%) were considered ‘white’. There were 11(19%) ‘not white’ subjects in the dropout category, as compared with 44 (77%) subjects who were considered ‘white’.
Table 1

Demographic Characteristics of Graduates and Dropouts by Frequency

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Graduates (n=19)</th>
<th>Dropouts (n=57)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (1)</td>
<td>15 (79%)</td>
<td>44 (77%)</td>
</tr>
<tr>
<td>Not White (0)</td>
<td>3 (16%)</td>
<td>11 (19%)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/Cohabitating (0)</td>
<td>2 (11%)</td>
<td>10 (18%)</td>
</tr>
<tr>
<td>Living Alone (1)</td>
<td>16 (84%)</td>
<td>47 (83%)</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed (0)</td>
<td>2 (11%)</td>
<td>9 (16%)</td>
</tr>
<tr>
<td>Disabled (1)</td>
<td>6 (32%)</td>
<td>24 (42%)</td>
</tr>
<tr>
<td>Unemployed (2)</td>
<td>21 (37%)</td>
<td>21 (37%)</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;High School (0)</td>
<td>5 (26%)</td>
<td>11 (19%)</td>
</tr>
<tr>
<td>High School Diploma (1)</td>
<td>6 (32%)</td>
<td>22 (39%)</td>
</tr>
<tr>
<td>Some College (2)</td>
<td>8 (42%)</td>
<td>19 (33%)</td>
</tr>
<tr>
<td>4 Year Degree (3)</td>
<td>0 (0%)</td>
<td>5 (9%)</td>
</tr>
<tr>
<td><strong>Living Situation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own house/Apt. (1)</td>
<td>11 (58%)</td>
<td>35 (61%)</td>
</tr>
<tr>
<td>Dependent on Others (2)</td>
<td>5 (26%)</td>
<td>5 (26%)</td>
</tr>
<tr>
<td>Homeless (4)</td>
<td>3 (16%)</td>
<td>4 (7%)</td>
</tr>
</tbody>
</table>

N=76 Number in parentheses denotes numerical code for statistical analyses

There were 12 (16%) subjects in the sample who were married/cohabitating, and 63 (83%) who reported living alone. The living alone category included subjects who were separated, widowed, divorced, or never married. This was because the information was deemed more meaningful if it was compared regarding the social support of living with a significant other, or living without a significant other in the home. Per Table 1, 10 (18%) of the dropouts reported they were married or cohabitating, and 47 (83%) reported
living alone. Only two graduates (11%) reported being married or cohabitating, while 16 (84%) reported living alone.

In the sample 11 (15%) of subjects reported they were employed, 30 (40%) were disabled, and 31 (41%) were unemployed. The employed category included subjects who are employed full and part-time, as well as homemakers. Nine (16%) dropouts were employed, 24 (42%) were disabled, and 21 (37%) were unemployed. Of the graduates, 2 (11%) were employed, 6 were disabled (32%), and 10 were unemployed (53%).

The sample consisted of 16 (21%) subjects who had completed some high school, 28 (37%) who had attained a high school diploma, 27 (36%) who had completed some college, and 5 (7%) who had attained a four year degree. Levels of education were also collapsed to create more meaningful groups. As illustrated in Table 1, 11 (19%) dropouts reported finishing some high school, 22 (39%) had attained a high school diploma, 19 (33%) reported finishing some college, and 5 (9%) dropouts reported attaining a four year college degree. Among the graduates, 5 (26%) subjects reported finishing some high school, 6 (32%) attained a high school diploma, and 8 (42%) reported finishing some college.

The sample consisted of 46 (61%) subjects who reported they lived in their own house/apartment, 23 (30%) were dependent on others/supervised living, and 7 (9%) were homeless. The ‘dependent on others’ group included subjects who reported living with friends, relatives, in supervised group homes, hospitals, or correctional facilities. The majority of dropouts, 35 (61%) reported living independently in their own home or apartment, 5 (26%) reported their homes were supervised living situations, and 4 (7%) dropouts reported they were homeless. Among the graduates, 11 (58%) reported living in
their own home or apartment, 5 (26%) were in supervised living situations, and 3 (16%) were homeless.

4.1.2 Quality of Life

As illustrated in Appendix C, 46 dropouts and 15 graduates had usable Quality of Life (QOL) scores. QOL scores ranged from 1.42- 4.08 for graduates, and scores ranged from 1.25-4.33 for dropouts. Responses for both groups appeared to be normally distributed, and skewness and kurtosis levels were within normal ranges.

4.1.2 Feelings of Empowerment

The descriptive statistics of subject responses on the Empowerment scale are depicted in Appendix C. Forty-six dropouts and 15 graduates had usable empowerment scores. Empowerment scores ranged from 2.25-3.25 for graduates, and scores ranged from 2.14-3.21 for dropouts. Responses for both groups appeared to be normally distributed, and skewness and kurtosis levels were within normal ranges.

4.1.3 Symptom Distress

As illustrated in Appendix C, 55 dropouts and 18 graduates had usable Symptom Distress scores. Symptom Distress scores ranged from 16-59 for graduates. Responses for the graduates appeared to be skewed to the right, with one outlier, respondent 62. The skewness value was within an acceptable range (2), however the kurtosis value was very high (6). This was due to the outlier respondent, who scored very low on the Symptom Distress scale in juxtaposition with the other graduate respondents. Symptom Distress scores ranged from 15-71 for dropouts. Responses for dropouts appeared to be normally distributed, and skewness and kurtosis levels were within normal ranges.
4.1.4 First Assigned Module

The data collected with regard to the module subjects were first assigned to upon commencement of treatment is displayed in Figure 1. Thirty-two percent of graduates began treatment in Mindfulness, 11% began with Interpersonal Effectiveness, 37% began with Emotion Regulation, and 21% began with Distress Tolerance. Twenty-three percent of clients who dropped out began with Mindfulness; 18% began with Interpersonal Effectiveness, 35% began with Emotion Regulation, and 23% began with Distress Tolerance. Nine percent more graduates than dropouts commenced on Mindfulness, while 7% more dropouts than graduates commenced on Interpersonal Effectiveness. These are both small associations (Rosenthal, 2001).

4.1.5 Percent first Assigned Module Completed.

The range of Percent of First Module completed for dropouts (n=55) was 11%-100%, with a mean of 56% and a standard deviation of 31%. The range of Percent of First Module completed for graduates was 56%-100% (n=17), with a mean of 83% and a standard deviation of 12%. The descriptive statistics of Percent of First Module are illustrated in Appendix C.
First assigned DBT module for graduates and dropouts

4.1.6 Percent total completed.

The range of Total Percent of Treatment completed for dropouts (n=53) was 11%-92%, with a mean of 49% and a standard deviation of 27%. The range of Total Percent of Treatment completed for graduates was 51%-100%, with a mean of 79% and a
standard deviation of 12%. The descriptive statistics for Total Percent Completed are illustrated in Appendix C.

4.2 Data Analysis

4.2.1 Treatment Completion

There were a few correlations with Treatment Completion- Percent Total Treatment Completed, Percent First Module, and Completion of All Modules Once. However, as none of these variables could be considered independent of Treatment Completion, it was concluded that logistic regression was not the appropriate statistical analyses to use for assessing the relationship between these variables and Treatment Completion.

The distribution of the relevant independent continuous variables (Percent First Module, Percent All Modules, Quality of Life, Optimism, Self-Esteem/Self-efficacy) were reviewed, and then collapsed into meaningful categories- ‘High,’ ‘Medium,’ and ‘Low’. As illustrated in Table 2, this was done by identifying the quartiles of the frequencies of these variables, and then dividing them into thirds. Though categorization also could have been accomplished by dividing the variables into two on the median, it was considered important to assess the responses in the middle separately from the low and the high responses, in case there was a significant difference between all three of these quartiles.

After the variables were collapsed into three categories, crosstab tables were calculated, and the Cramer’s V was analyzed. As several statistical analyses were being conducted, the Bonferroni Correction was utilized. The desired family wise alpha level was .05; therefore the alpha level for each individual statistical test was .01.
Table 2

*Frequencies of independent variables collapsed into categories by percentile*

<table>
<thead>
<tr>
<th></th>
<th>% 1st Module</th>
<th>% all modules</th>
<th>QOL</th>
<th>SE/SE</th>
<th>Optimism</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Valid</td>
<td>72</td>
<td>65</td>
<td>61</td>
<td>60</td>
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<td>Missing</td>
<td>4</td>
<td>11</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>67</td>
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<td>2.5</td>
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<td>SD</td>
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<td>30</td>
<td>27</td>
<td>.69</td>
<td>.60</td>
</tr>
<tr>
<td>Percentiles</td>
<td>25</td>
<td>34</td>
<td>33</td>
<td>2.4</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>50</td>
<td>44</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>67</td>
<td>64</td>
<td>2.8</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>66</td>
<td>78</td>
<td>73</td>
<td>3.0</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>87</td>
<td>77</td>
<td>3.3</td>
<td>2.9</td>
</tr>
</tbody>
</table>

N= 72; SD= Standard Deviation; SE/SE= self-esteem/self-efficacy; QOL= quality of life

Table 3

*Crosstabulation of treatment completion and percent first module*

<table>
<thead>
<tr>
<th></th>
<th>Completion</th>
<th></th>
<th></th>
<th></th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dropout</td>
<td>Graduate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% 1st Module</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>25</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>3.4</td>
<td>-3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>13</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-1.4</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>17</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-2.1</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N=72 ** = p< .01

.41**
The crosstabulation of Treatment Completion and Percent First Module (Table 3) was statistically significant at \( p<.01 \). Subjects who attended 50\% or less of their first module dropped out of DBT skills training (n=25). Throughout the levels of the independent variable, the higher the Percent of First Module completed, the more likely the client was to complete skills training, however, the Medium category was not statistically significant.

As illustrated in Tables 4&5, Optimism and QOL were not significantly related to Treatment Completion at \( p=.01 \).

Table 4

*Crosstabulation of treatment completion and optimism*

<table>
<thead>
<tr>
<th>Optimism</th>
<th>Completion</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dropout</td>
<td>Graduate</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>1.8</td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-.3</td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-1.7</td>
</tr>
<tr>
<td><strong>N=57</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5

*Crosstabulation of treatment completion and QOL*

<table>
<thead>
<tr>
<th></th>
<th>Completion</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dropout</td>
<td>Graduate</td>
<td>Cramer’s V</td>
</tr>
<tr>
<td>QOL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>19</td>
<td>3</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>1.5</td>
<td>-1.5</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>14</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-.2</td>
<td>.3</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>13</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-1.3</td>
<td>-1.3</td>
<td></td>
</tr>
</tbody>
</table>

N=61

Self-Esteem/Self-Efficacy was not significantly related to treatment completion at the desired alpha level ($p<.01$); however it was significant at the .05 level (Table 6). As Self-Esteem/Self-Efficacy increased, the amount of graduates increased as well.
Table 6

*Crosstabulation of treatment completion and self-esteem/self-efficacy*

<table>
<thead>
<tr>
<th>Self-Esteem/Self-Efficacy</th>
<th>Completion</th>
<th></th>
<th></th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dropout</td>
<td>Graduate</td>
<td>Cramer’s V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;.05</td>
<td>.32*</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>14</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-.2</td>
<td>.2</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>20</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>2.2</td>
<td>-2.2</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>11</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-2.1</td>
<td>2.1</td>
<td></td>
</tr>
</tbody>
</table>

N=60 * p<.05

Table 7 illustrates the crosstabulation between Treatment Completion and First Module Completed. There was no significant correlation between these two variables. As there appeared to be a difference in the percentage or proportion of graduates and dropouts in each module, a pair-wise column proportion test was also conducted. This test did not find any significant differences between the cells in the table (Table 7).
Table 7
Crosstabulation of treatment completion and first module attended

<table>
<thead>
<tr>
<th>First Module</th>
<th>Completion</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dropout</td>
<td>Graduate</td>
</tr>
<tr>
<td><strong>Mindfulness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>13&lt;sub&gt;a&lt;/sub&gt;</td>
<td>6&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>% within completion</td>
<td>68.4%</td>
<td>31.6%</td>
</tr>
<tr>
<td>% within 1&lt;sup&gt;st&lt;/sup&gt; Module</td>
<td>-.7</td>
<td>.7</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>10&lt;sub&gt;a&lt;/sub&gt;</td>
<td>2&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td><strong>Emotion Regulation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>83.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>% within completion</td>
<td>17.9%</td>
<td>10.5%</td>
</tr>
<tr>
<td>% within 1&lt;sup&gt;st&lt;/sup&gt; Module</td>
<td>.8</td>
<td>-.8</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>20&lt;sub&gt;a&lt;/sub&gt;</td>
<td>7&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td><strong>Interpersonal Effectiveness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>74.1%</td>
<td>25.9%</td>
</tr>
<tr>
<td>% within completion</td>
<td>35.7%</td>
<td>36.8%</td>
</tr>
<tr>
<td>% within 1&lt;sup&gt;st&lt;/sup&gt; Module</td>
<td>-.1</td>
<td>.1</td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>13&lt;sub&gt;a&lt;/sub&gt;</td>
<td>4&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td><strong>Distress Tolerance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>76.5%</td>
<td>23.5%</td>
</tr>
<tr>
<td>% within completion</td>
<td>23.2%</td>
<td>21.1%</td>
</tr>
<tr>
<td>% within 1&lt;sup&gt;st&lt;/sup&gt; Module</td>
<td>.2</td>
<td>-.2</td>
</tr>
</tbody>
</table>

Subscript letter ‘a’ denotes subset of module categories whose column proportions do not differ
M=Mindfulness, IE= Interpersonal Effectiveness, ER= Emotion Regulation, DT= Distress Tolerance
### 4.2.2 Completion of modules once.

There were a few independent variables that were correlated with Completing All Modules Once: Self-Esteem/Self-Efficacy, Optimism, Empowerment, and Percent of First Module (see Table 9). Again, Logistic Regression was not the appropriate method of analysis with this dependent variable. Percent First Module could not be considered independent of Completing All Modules Once, and instead was entered into a crosstabulation table using the categorical variable for Percent First Module depicted in Table 2. As illustrated in Table 8, there was a significant correlation between these two variables. Clients who did not complete at least 64% of their first module did not complete all modules once.

Optimism and Self-Esteem/Self-Efficacy, subscales on the Empowerment scale, did not tolerate each other well (TOL= .4, VIF= 2). Therefore, correlations for all three of these variables with Completion of All Modules Once were calculated (see Table 9). All three of these variables were significantly correlated with Completion of All Modules Once at the $p=.05$ significance level.
Table 8

*Crosstabulation of Percent First Module and Completion of Modules Once*

<table>
<thead>
<tr>
<th>Percent First Module</th>
<th>Completion of Modules 1X</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Low</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>Count</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>4.6</td>
<td>-4.6</td>
</tr>
<tr>
<td>Medium</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Count</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>-1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>High</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Count</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Residual</td>
<td>-3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>N=60 * p&lt;.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9

*Pearson r Correlation Matrix of Completion of Modules Once*

<table>
<thead>
<tr>
<th></th>
<th>All Modules</th>
<th>SE/SE</th>
<th>Optimism</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE/SE</td>
<td>.26*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td>.33*</td>
<td>.76**</td>
<td></td>
</tr>
<tr>
<td>Empowerment</td>
<td>.28*</td>
<td>.86**</td>
<td>.79**</td>
</tr>
</tbody>
</table>

N=76 * p=.05; **p=.01 SE/SE= self-esteem/self-efficacy
4.2.3 Total percent of treatment completed

There were also variables that were significantly correlated with Total Percent of Treatment Completed- Completion of all Modules Once, Percent of First Module Completed, Self-Esteem/Self-Efficacy, and Optimism. The same issue occurred with these variables- while Completion of all Modules Once and Percent of First Module Completed were not independent of Total Percent of Treatment Completed, Self-Esteem/Self-Efficacy and Optimism were too highly correlated to be entered into a regression equation. Correlations were calculated between all relevant variables and Total Percent of Treatment Completed. Table 10 shows the crosstabulation of Total Percent of Treatment Completed and Percent of First Module Completed, using the categorical variables illustrated in Table 2. As might be expected, there was a significant correlation between these two variables. None of the subjects who completed at least 78% of their first module attended less than 44% of sessions while enrolled in DBT skills training. Conversely, none of the subjects who attended at least 74% of all sessions attended less than 50% of their first module.
Table 10

*Crosstabulation of Total Percent of Treatment Completed and Percent of First Module Completed*

<table>
<thead>
<tr>
<th>Percent Total</th>
<th>Percent First Module</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>6.8</td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-3</td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-4.1</td>
</tr>
</tbody>
</table>

N=65 **p<.01

Table 11 shows the crosstabulation of Total Percent of Treatment Completed and Self-esteem/self-efficacy. This correlation was not significant at either $p=.05$ or $p=.01$. 
Table 11

*Crosstabulation of total percent of treatment completed and self-esteem/self-efficacy*

<table>
<thead>
<tr>
<th>Percent Total</th>
<th>Self-esteem/self-efficacy</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>.0</td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>.9</td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-1</td>
</tr>
</tbody>
</table>

N=51

---

Table 12

*Crosstabulation of total percent of treatment completed and Optimism*

<table>
<thead>
<tr>
<th>Percent Total</th>
<th>Optimism</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>1.5</td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>.7</td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-2.1</td>
</tr>
</tbody>
</table>

N=48  p<.05
Table 12 depicts the crosstabulation of Optimism and Percent of all Modules Completed. This correlation was significant at $p = .02$. Subjects who reported higher levels of optimism attended more sessions than those who reported lower levels of optimism.

**4.2.4 Percent of first module completed**

The correlations between Percent of First Module Completed, Self-Esteem/Self-Efficacy, and Optimism are depicted in Table 13 and Table 14. Although Self-Esteem/Self-Efficacy was significantly correlated with Percent of First Module Completed, Optimism was not. Subjects who reported higher levels of self-esteem and self-efficacy attended more sessions in their first module than those who reported lower levels of self-esteem and self-efficacy.

### Table 13

*Crosstabulation of percent first module and self-esteem/self-efficacy*

<table>
<thead>
<tr>
<th>Percent First Module</th>
<th>Self-Esteem/Self-Efficacy</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>.1</td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>1.8</td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-2</td>
</tr>
</tbody>
</table>

N=48 $p<.05$


Table 14

*Crosstabulation of percent first module and optimism*

<table>
<thead>
<tr>
<th>Percent First Module</th>
<th>Optimism</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Count</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>2.1</td>
</tr>
<tr>
<td>Medium</td>
<td>Count</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-.5</td>
</tr>
<tr>
<td>High</td>
<td>Count</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Adjusted Residual</td>
<td>-1.9</td>
</tr>
</tbody>
</table>

N=53

4.2.5 Quality of life

As several other independent variables were correlated, they were also examined with regard to the amount of variance in QOL, Symptom Distress, and Empowerment. The most noteworthy regression equation included variables as predictors of QOL—specifically, Race, Employment Status, Living Situation and Optimism. In Model 1 (Table 15), these variables were first entered into a regression equation as a block to examine the relationship between the variables and the amount of variance they accounted for in QOL. This model was statistically significant, F (4, 49) = 6.72, p<.001, with an adjusted R² of .30. From this information a model was constructed using three variables were chosen: Race, Living Situation and Optimism. As illustrated in Table 15, this prediction equation significantly predicted QOL, F (3, 53) = 8.63, p<.001. The adjusted R² in this
equation was .29, or 29% of the variance in QOL can be accounted for by Living Situation, Race, and Optimism. According to Cohen, this is a small effect size.

Table 15

*Block regression model predicting Quality of Life*

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>SE</th>
<th>B</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living Situation</td>
<td>-.32</td>
<td>.10</td>
<td>-.25</td>
<td>.01</td>
</tr>
<tr>
<td>Race</td>
<td>.20</td>
<td>.23</td>
<td>.37</td>
<td>.12</td>
</tr>
<tr>
<td>Optimism</td>
<td>.34</td>
<td>.17</td>
<td>.49</td>
<td>.00</td>
</tr>
<tr>
<td>Employment Status</td>
<td>-.19</td>
<td>.13</td>
<td>-.20</td>
<td>.13</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living Situation</td>
<td>-.35</td>
<td>.09</td>
<td>-.27</td>
<td>.00</td>
</tr>
<tr>
<td>Race</td>
<td>.25</td>
<td>.22</td>
<td>.46</td>
<td>.04</td>
</tr>
<tr>
<td>Optimism</td>
<td>.36</td>
<td>.16</td>
<td>.51</td>
<td>.00</td>
</tr>
</tbody>
</table>

N=76
SE= Standard Error

**4.2.6 Significant Correlations**

Correlations between all of the variables were analyzed, and are depicted in Appendix D. Interval variables were analyzed using the Pearson ‘r’ statistic, while nominal and ordinal variables were analyzed using the Cramer’s ‘V’ statistic.
As illustrated in Appendix D, there were several correlations between the Adult Outcomes Measure (AOM) scale scores and demographic information. As might be expected, Symptom Distress is significantly negatively correlated with Empowerment, and QOL. Race is significantly correlated with QOL and living situation, therefore Caucasian subjects are more likely to reported a higher quality of life, and more likely to report living independently than their minority counterparts. Financial status, a subscale of QOL, was significantly correlated with several variables, including Symptom Distress, Feelings of Empowerment, and Race. However, Financial Status was not significantly correlated with Employment or Living Status.

Subscales of the Feelings of Empowerment Scale also had significant correlations with demographic variables (see Appendix D). Self-Esteem/Self-Efficacy is correlated with Employment Status, indicating a positive relationship with being employed and self-esteem. Community Activism is negatively correlated with Living Situation, suggesting that those who live independently are less likely to have positive feelings about social action in their communities. Level of Education was significantly positively correlated with Feelings of Powerlessness, suggesting that the more education the subject has received, the less control they feel they have over their lives and surroundings.

### 4.3 Research Questions

After completing the above analyses, the research questions delineated in chapter three were reviewed for significant results.

Research Question 1: Is there a correlation between DBT clients’ demographic characteristics and DBT skills group completion?
Data analyses found no significant evidence that any of the demographic characteristics collected in this study (education, living situation, race, employment status, and marital status) were statistically correlated with completion of treatment. Further, there were no significant correlations between demographic characteristics and percent of first module completed, percent total treatment attended, or completion of all modules once.

*Research Question 2: Is there a correlation between DBT skills group completion and feelings of empowerment, quality of life, and symptom distress?*

There was no significant evidence that empowerment, QOL, and symptom distress were correlated with treatment completion. In addition, none of the subscales in empowerment and QOL were significantly correlated with treatment completion. However, there were significant correlations among the empowerment and empowerment subscales and other treatment variables. Specifically, optimism was positively correlated with total percent of treatment completed. Self-esteem/self-efficacy, empowerment, and optimism were correlated with completion of all modules once. Finally, self-esteem/self-efficacy is correlated with percent of first module completed (see Appendix D).

*Research Question 3: Is there a difference between clients who complete DBT skills group and clients who do not complete skills group based on their first assigned skills training module, and percentage of this module attended?*

Although there was no evidence of a correlation between treatment completion and first assigned skills training module, there was a significant correlation between the percentage of first module completed and treatment completion. Percentage of first
module completed is also correlated with percent of total sessions attended and completion of all modules once (see Appendix D).

Research Question 4: Can demographic variables, psychosocial variables, percent first module attended, and first assigned module predict which clients are more likely to complete all modules once, the total percent of sessions attended, or the clients who successfully complete DBT skills group?

Though logistic regression was an inappropriate method of analysis given the sample, alternate data analyses revealed that Percent First Module Attended, Completion of all Modules Once, and Total Percent of Sessions Attended are significantly related with treatment completion. Clients who attended 50% or less of their first module did not successfully complete treatment (Table 3). None of the other independent variables are significantly related to DBT treatment completion. Optimism, Percent of First Module completed, Empowerment, and Self-esteem/Self-efficacy are all significantly correlated with Completion of all Modules Once (see Tables 7 and 8). Clients who did not complete at least 64% of their first module did not complete all modules once. Percent First Module and Optimism are correlated with Percent of Total Sessions attended (see Tables 9 and 10). None of the subjects who completed at least 78% of their first module attended less than 44% of sessions while enrolled in DBT skills training. Finally, Self-Esteem/Self-Efficacy is significantly positively correlated with Percent of First Module Completed (Table 12).
Chapter 5: Discussion

The results in this study were interesting, and this includes the final sample sizes. The disparity between the number of subjects in each group (dropout and graduate) was not anticipated. Though it was expected that there would likely be more dropouts than graduates, there were nearly three times as many. This study only examined Dialectical Behavior Therapy (DBT) skills training, and does not support other published studies that suggest DBT is a protective factor against dropout. However, it does parallel many previous findings that indicate a high dropout rate in mental health treatment regardless of treatment modality and setting. Treatment dropout in this study could be related to the population served in community mental health (CMH). Clients served in CMH are often already at high risk for treatment dropout, due to instability in financial status and chronic mental illness (Wierzbicki & Pekarik, 1993). Unfortunately, the dropout rate of other clients at this CMH setting is unknown.

Originally, it was predicted that defining graduation by completing all modules twice would significantly increase the risk of treatment dropout, as this is a considerable amount of time for a client to remain in treatment, especially in CMH. However, Linehan (1993) originally defined completion of skills training as twice through, and it was important to the DBT treatment team to maintain the fidelity of the treatment. As result, completion of all modules once was included as a variable, however there were very few subjects who completed once and did not complete twice (n=6). Although current
research indicates that shorter length of treatment increased treatment compliance, in this study, other factors seem to be involved (Daley & Zuckoff, 1999).

There were interesting results with regard to the demographic characteristics of the sample. As this project was completed in a CMH setting that serves a low income population and the uninsured, it was not surprising that the majority of subjects were on disability benefits or unemployed. However, the majority of subjects also reported living independently in an apartment or home, which was not expected to coincide with unemployment and disability. Nevertheless, financial status was not correlated with unemployment, disability or living situation. This could be because, regardless of other independent variables, the majority of subjects (62%) responded on average that they felt “terrible” or “mostly dissatisfied” with their financial status. It appears that apart from employment status and living situation, the majority of subjects were struggling financially, which was expected. Most subjects also reported being single, though being married or cohabitating was positively correlated with financial status.

The fact that the majority of subjects were Caucasian was not a surprise given the population in Columbus, Ohio is 68% Caucasian (U.S. Census Bureau, 2000). Further, minorities are largely underserved in mental health treatment, regardless of the modality, setting, or location (Substance Abuse and Mental Health Services Administration, 2001). Minority status was actually a predictor of lower Quality of Life, (QOL) and was negatively correlated with living independently. Minorities in this study were also more likely to have negative feelings regarding financial status than Caucasians. This is also to be expected given the national statistics- minorities in the U.S. or more likely to be
struggling financially than their Caucasian counterparts (United States Census Bureau, 2008).

Higher levels of education were positively correlated with feelings of powerlessness. The powerlessness subscale includes questions such as: “I feel powerless most of the time” and “most of the misfortunes in my life were due to bad luck.” In this study, subjects with higher levels of education felt that they had less control over their past and present life situations. This could be related to a higher level of insight into one’s mental illness, and feeling unable to control symptoms related to this mental illness. Nevertheless, the correlation between education and powerlessness merits further research.

None of the demographic variables measured in this study were significantly correlated with treatment completion, although some published studies have identified correlations between demographic characteristics and dropout. For example, research has found that minority status is a risk factor for premature termination (Wierzbicki & Pekarik, 1993; Lothstein, 1978). However, the available research on this topic includes samples mostly comprised of Caucasian subjects, which makes these findings difficult to generalize. The current study is no exception, as 79% of subjects were Caucasian. This increases support for the need for research surrounding minorities and treatment dropout, and more specifically, with DBT.

The published research on treatment compliance and other demographic factors measured in this study is conflicted. For example, some studies have found socioeconomic status and lower income as predictors of dropout, although other studies have not found a significant relationship between the two (Rabin, Kaslow, & Rehm,
One demographic factor that has the most significant support for a relationship with treatment dropout is age. Younger clients seem to have higher rates of dropout than their older counterparts (McMurran, Huband, & Overton, 2010; Wierzbicki & Pekarik, 1993). Information on age was not collected individually in this study. However, the researcher was given an age range of subjects: 20-35 years old. This age range is relatively young - in fact; other published studies have found that clients ages 35 and younger were less likely to complete treatment than those older than 35 years of age (Hird, Williams, & Markham, 1997; Monras & Gaul, 2000). It is likely the age of the sample could be related to the high dropout rate, however further research on this variable and DBT skills group attendance is needed.

Although symptom distress was not significantly correlated with dropout in this study, current research supports a correlation between symptom severity and dropout in clients with BPD. For example, in a qualitative exploration of clients diagnosed with BPD, researchers found that non-compliant clients engaged in higher rates of impulsive, manipulative, and aggressive behaviors than other clients (Tanesi, Yazigi, DeMattos, & diNascimento, 2007). Studies with other diagnoses have also found significant support for symptom severity as a predictor of dropout, including Schizophrenia, Major Depression, and Substance Dependence (Bornovalova & Daughters, 2007; Chaffin, 1992; Montero, Asencio, Ruiz, & Hernandez, 1999). Perhaps there are other variables significantly related to DBT skills training dropout that were not controlled for in this study, for example, substance use and medication compliance.

Although feelings of empowerment, self-esteem/self-efficacy, and optimism were significantly correlated with percent total treatment completed and completion of all
modules once, these correlations were not high. This could suggest that an optimistic outlook, locus of control, or feelings of self-esteem/self-efficacy are not as relevant in DBT skills group as with other group treatments. Other research has found that attitude toward treatment can be involved with treatment compliance, and that a positive attitude toward treatment increases treatment compliance (Buchanan, 1996; Connelly, Piper, de Carufel & Debbane, 1986; Wenzel, Jeglic, Levy-Mack, Beck, & Brown, 2008). If a positive attitude is not relevant to treatment compliance in DBT skills training, this may support the effectiveness of DBT treatment. Perhaps DBT is an effective treatment modality regardless of client attitude. More research regarding these variables and treatment compliance in DBT is necessary to clarify this hypothesis.

There was no significant relationship between First Assigned Module and any of the other variables. Ten percent more graduates commenced on the Mindfulness module than dropouts. This is a small association (Rosenthal, 2001). The foundation of DBT skills training is mindfulness practice, therefore, one might expect that subjects who commenced on the mindfulness module might experience higher rates of compliance than others. Seven percent more dropouts commenced on Interpersonal Effectiveness than graduates. This is also a small association (Rosenthal, 2001). As the Interpersonal Effectiveness module focuses on the management of relationships as opposed to coping skills to manage emotions and stress, it could be that subjects were less likely to stay in DBT skills group when commenced on this module. However, these differences were not significant in this study, and this could be because of the small sample size, and the skewed group sizes. Emotion regulation was the most frequent first module, with 35% of subjects commencing on this module. This could be related to the time of the year this
module is offered, the length of the module in comparison to others, or it could simply be due to chance.

There were several interesting findings with regard to the treatment compliance variables. Although the distribution of Percent of First Module completed is slightly skewed to the right, the distribution for Percent of all Sessions attended was slightly skewed to the left. This suggests that subjects attended more sessions during their first module than subsequent modules. Regardless, there is a significant correlation between the Percent of First Module attended and treatment completion. It was not expected that Percent of First Module attended would be so highly correlated with Percent of Total Sessions Attended ($r = .92$). This is a significant finding—although not directly related to the dependent variable; the percent of total sessions attended can be an important factor when examining treatment compliance.

Although logistic regression proved inappropriate for analysis of treatment completion, crosstabulation tables and correlations did elicit significant results. None of the subjects who attended 50% or less of their first modules went on to complete treatment. These results suggest that early treatment attendance is one of few variables highly related to treatment completion, and this may be the most significant finding in this study.

Living situation, race, and level of optimism were the most significant predictors of QOL. Living situation evidently contributes significantly to one’s quality of life, which was expected. Other research supports the relationship between optimism and QOL: If one is optimistic, one is more likely to see the quality of one’s life as positive, and is also more likely to use healthy coping skills (Lynch, 2007).
5.1 Implications and Suggestions for Future Research and Practice

It appears that clients who have a low attendance rate in their first assigned module are at significantly higher risk for treatment dropout than other clients. This has specific implications for DBT clinicians who hope to prevent treatment dropout. If clinicians keep track of attendance in the first module, they can identify the clients who have a lower attendance rate, and work individually with those clients to prevent dropout. As there were many variables that were not measured or controlled for in this study, the issues related to poor attendance in the first module may vary by client. For example, one client may be struggling with substance abuse, while another may have difficulty finding transportation. However if the clinician devotes attention to this issue in individual sessions, he or she can work with the client and develop strategies to increase attendance in subsequent modules.

Pre-treatment orientation can increase commitment to skills training; and research supports pre-treatment orientation as a protective factor in treatment compliance. This may be instrumental for increasing attendance in the first module and throughout DBT skills training and is easily overlooked in a CMH setting. The importance of commitment to treatment during pre-treatment is emphasized in DBT. In this stage, there are two goals: the therapist and the client must enter into agreement that they will work together to help the client, and the therapist should identify any beliefs or expectations about therapy the client may have that will limit success. There are several ‘commitment strategies’ that the therapist uses during this stage, and the client cannot continue into treatment until they have reached an agreement (Linehan, 1993). Many studies have found that implementing pre-treatment orientation increases the likelihood of compliance.
with group therapy and reduces dropout (France & Dugo, 1985; Garrison, 1987). Further, research suggests that pre-treatment orientation can lead to higher group cohesiveness, which can also be a factor in treatment attendance (France & Dugo, 1985). DBT therapists use dialectical strategies in individual treatment to help the client work towards change in the context of self-acceptance (Linehan, 1993). These strategies can increase optimism and self-esteem in the client, decreasing the risk for premature termination.

Other factors that were not included in this implementation of DBT skills group were 24-hour phone coaching; and individual DBT treatment. These factors likely increase treatment compliance, including attendance to DBT skills group sessions. Research on the curative factors in the specific facets of DBT treatment has yet to be published. However, Linehan (1993) encourages the implementation of all facets of DBT for the best results. The reinforcement of DBT skills in individual therapy and after hours phone coaching could increase the client’s understanding of the usefulness of these skills, as well as his or her commitment to skills training.

Although many of the variables in this study were not related to dropout, this fact in itself has implications for further research. As there were several factors that were not controlled for in this study, future research should be focused on designing and implementing an active longitudinal study. This study could monitor a multitude of variables, including group cohesion and therapist variables.

DBT is a relatively new treatment modality, and there are many areas in need of further research. Published studies on DBT have included few, if any, minority subjects, and research on multicultural considerations is a necessity. Although race was not linked to treatment compliance in this study, there were few minorities in the sample to use as
comparison. Regardless of minority status and its relationship to dropout, an accurate assessment of DBT with cultural groups is essential to the continued use and growth of this modality.

Another area that merits further research is DBT in CMH. The DBT treatment team that worked with the subjects in this study is dedicated to their clients and to providing DBT skills training in an effective manner. Unfortunately, they have limited resources, and this restricts their ability to fulfill all of the facets of DBT treatment, including pre-treatment orientation, individual therapy, and 24-hour phone coaching. Further research on current DBT treatment in CMH can inform a more specific guide to implementation of DBT treatment. This may also help increase knowledge on the aspects of DBT that are the most curative. This information would also help guide clinicians in maintaining the fidelity of DBT treatment. Many published studies have only implemented certain aspects of DBT, or implemented them differently than posited by Linehan and colleagues. This can lead to varying treatment results, and further convolutes the existing body of published research on the topic.

5.2 Limitations

Unfortunately, there is a definitive limitation in the amount of information an ex-post facto study such as this one can contribute to the field. One of the main limitations of this study is likelihood that the significant results elicited may not be due correlations with independent variables, but instead by chance. Heppner, Kivlighan, and Wampold, (1992) noted that the majority of research on treatment non-compliance has been conducted ex post facto, with little grounding in theory. As discussed previously in this manuscript, this can lead to conflicting results. For example, although some studies found
that education and employment status predicted dropout, this study did not support those findings. Heppner et al. suggested that studies should be conducted with a basis in theory and previous research, not simply a non-directive exploration of related variables. The variables measured in this study were chosen specifically due to their relationship with treatment dropout in previous research. Another major limitation was the overall sample size and the disparity between groups. As there were three times as many dropouts as graduates, it was difficult to find a variable that was significantly related to treatment completion.

There were many variables in this study that were not controlled for or measured. Although the researcher attempted to hold aspects of the study constant, including the location of the treatment and therapists involved in skills training, there were several variables the researcher was unable to control. One major variable is the time frame in which the data was collected, in relationship to the receipt of DBT treatment. Specific dates are considered protected health information; and the researcher was unable to collect this information. Therefore, it is unknown at what point these data were collected in relation to when DBT treatment was commenced. As this and many CMH centers incorporate a case management component, some clients may have been receiving maintenance services with the agency for several years before actually commencing DBT treatment. Other specific variables that may account for variability in treatment completion include substance use, legal history, and medication compliance.

Very little research has been conducted using Adult Outcome Measure (AOM) results, and although some of the scales have validity and reliability statistics, others do not. Client response on the AOM can be subjective, as clients could be exaggerating
symptoms or withholding information. There are also limitations with regard to the generalizability of this study. The use of one community mental health center limits the ability of the results of this study to be generalized beyond the clients treated at this specific setting.

5.3 Conclusions

DBT is a relatively new treatment, and there are several aspects of this modality that merit further examination. One of these aspects is treatment compliance in DBT. Although there were limitations in this study, the results contribute to our understanding of treatment compliance in DBT skills training. In addition, this study has identified specific variables that may not be related to treatment compliance, thus increasing support for a controlled research study involving variables that were not measured in this study.

Marsha Linehan (1993) has stated that the lives of clients with BPD are unbearable as they are currently being lived. She further posits that DBT can help clients increase their quality of life, and give them skills to manage their thoughts and emotions. Research continues to grow on the effectiveness of this treatment not only with clients with BPD, but with other mental health diagnoses. Regardless, DBT cannot be effective if the client does not remain in treatment. Research that provides increased information on the risk factors involved in treatment dropout can be valuable not only for the clients, clinicians, and administrators involved in these clients, but for the public at large. Keeping clients in a treatment that will reduce their symptoms and enhance their quality of life has a positive impact not only on the local community, but the national community.
as well, by reducing the financial burden of treating chronic clients, and increasing the likelihood of clients becoming productive members of society.
References


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Appendix A

Ohio Mental Health Consumer Outcomes System

Adult Consumer Form
Ohio Mental Health Consumer Outcomes System
Adult Consumer Form

Today’s Date ___/___/____
Name ________________________________
Date of Birth ___/___/____
Gender (check one): Male ☐ Female ☐

Agency Use Only
Client’s Medical Record Number

We are very interested in how you are doing, and how our services may or may not be helping you. Please answer all of the questions below, then give the questionnaire to your case manager or another staff person at the mental health agency.

Part 1
Below are some questions about how satisfied you are with various aspects of your life in the past 6 months. For each question, checkmark ☑ the answer that best describes how you feel.

4. How much money you have to spend for fun?
☐ Terrible
☐ Mostly dissatisfied
☐ Equally satisfied/dissatisfied
☐ Mostly satisfied
☐ Very pleased

5. The amount of meaningful activity in your life (such as work, school, volunteer activity, leisure activity)?
☐ Terrible
☐ Mostly dissatisfied
☐ Equally satisfied/dissatisfied
☐ Mostly satisfied
☐ Very pleased

6. The amount of freedom you have?
☐ Terrible
☐ Mostly dissatisfied
☐ Equally satisfied/dissatisfied
☐ Mostly satisfied
☐ Very pleased

7. The way you and your family act toward each other?
☐ Terrible
☐ Mostly dissatisfied
☐ Equally satisfied/dissatisfied
☐ Mostly satisfied
☐ Very pleased
☐ Does not apply

Please turn to the next page ➔
8. Your personal safety?
   - Terrible
   - Mostly dissatisfied
   - Equally satisfied/dissatisfied
   - Mostly satisfied
   - Very pleased

9. The neighborhood in which you live?
   - Terrible
   - Mostly dissatisfied
   - Equally satisfied/dissatisfied
   - Mostly satisfied
   - Very pleased

10. Your housing/living arrangements?
    - Terrible
    - Mostly dissatisfied
    - Equally satisfied/dissatisfied
    - Mostly satisfied
    - Very pleased

11. Your health in general?
    - Terrible
    - Mostly dissatisfied
    - Equally satisfied/dissatisfied
    - Mostly satisfied
    - Very pleased

12. How often do you have the opportunity to spend time with people you really like?
    - Never
    - Seldom/rarely
    - Sometimes
    - Often
    - Always

13. How often does your physical condition interfere with your day-to-day functioning?
    - Never
    - Seldom/rarely
    - Sometimes
    - Often
    - Always

Part 2

The next few items ask you about your health and medications within the past 6 months.

14. Concerns about my medications (such as side effects, dosage, type of medication) are addressed:
    - Never
    - Seldom/rarely
    - Sometimes
    - Often
    - Always
    - Not applicable/no medications

The next two items deal with how you have been treated by other people.

15. I have been treated with dignity and respect at this agency.
    - Never
    - Seldom/rarely
    - Sometimes
    - Often
    - Always

16. How often do you feel threatened by people’s reactions to your mental health problems?
    - Never
    - Seldom/rarely
    - Sometimes
    - Often
    - Always

Part 3

The following questions ask you about how much you were distressed or bothered by some things during the last seven days. Please mark the answer that best describes how you feel.

During the past 7 days, about how much were you distressed or bothered by:

17. Nervousness or shakiness inside
    - Not at all
    - A little bit
    - Some
    - Quite a bit
    - Extremely

Please turn to the next page ➔
18. Being suddenly scared for no reason
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

19. Feeling fearful
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

20. Feeling tense or keyed up
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

21. Spells of terror or panic
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

22. Feeling so restless you couldn’t sit still
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

23. Heavy feelings in arms or legs
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

24. Feeling afraid to go out of your home alone
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

25. Feeling of worthlessness
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

26. Feeling lonely even when you are with people
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

27. Feeling weak in parts of your body
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

28. Feeling blue
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

29. Feeling lonely
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

30. Feeling no interest in things
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

31. Feeling afraid in open spaces or on the streets
   - Not at all
   - A little bit
   - Some
   - Quite a bit
   - Extremely

---

Please turn to the next page ➔
32. How often can you tell when mental or emotional problems are about to occur?
   - Never
   - Seldom/rarely
   - Sometimes
   - Often
   - Always

33. When you can tell, how often can you take care of the problems before they become worse?
   - Never
   - Seldom/rarely
   - Sometimes
   - Often
   - Always

34. I can pretty much determine what will happen in my life.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

35. People are limited only by what they think is possible.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

36. People have more power if they join together as a group.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

37. Getting angry about something never helps.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

38. I have a positive attitude toward myself.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

39. I am usually confident about the decisions I make.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

40. People have no right to get angry just because they don’t like something.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

41. Most of the misfortunes in my life were due to bad luck.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

42. I see myself as a capable person.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

43. Making waves never gets you anywhere.
   - Strongly agree
   - Agree
   - Disagree
   - Strongly Disagree

Please turn to the next page ➔
44. People working together can have an effect on their community.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

45. I am often able to overcome barriers.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

46. I am generally optimistic about the future.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

47. When I make plans, I am almost certain to make them work.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

48. Getting angry about something is often the first step toward changing it.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

49. Usually I feel alone.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

50. Experts are in the best position to decide what people should do or learn.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

51. I am able to do things as well as most other people.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

52. I generally accomplish what I set out to do.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

53. People should try to live their lives the way they want to.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

54. You can't fight city hall (authority).
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

55. I feel powerless most of the time.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

56. When I am unsure about something, I usually go along with the rest of the group.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

57. I feel I am a person of worth, at least on an equal basis with others.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree
58. People have a right to make their own decisions, even if they are bad ones.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

59. I feel I have a number of good qualities.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

60. Very often a problem can be solved by taking action.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

61. Working with others in my community can help to change things for the better.
   □ Strongly agree
   □ Agree
   □ Disagree
   □ Strongly Disagree

62. What was the last school grade you completed?
   □ Less than 1st grade  □ 10th grade
   □ 1st grade          □ 11th grade
   □ 2nd grade         □ High school diploma/GED
   □ 3rd grade         □ Trade/Tech school
   □ 4th grade         □ Some college
   □ 5th grade         □ 2 yr college/Associate degree
   □ 6th grade         □ 4 yr college/Undergraduate degree
   □ 7th grade         □ Graduate school courses
   □ 8th grade         □ Graduate degree
   □ 9th grade         □ Post-graduate studies
   □ Further special studies

63. Race (check all that apply):
   □ White
   □ Hispanic/Latino
   □ Native American/Pacific Islander
   □ Asian
   □ Black/African American
   □ Other ____________

64. What is your marital status?
   □ Never married
   □ Married
   □ Separated
   □ Divorced
   □ Widowed
   □ Living together

65. What is your current living situation?
   □ Your own house/apartment
   □ Friend's home
   □ Relative's home
   □ Supervised group living
   □ Supervised apartment
   □ Boarding home
   □ Crisis residential
   □ Child foster care
   □ Adult foster care
   □ Intermediate care facility
   □ Skilled nursing facility
   □ Respite care
   □ MR intermediate care facility
   □ Licensed MR facility
   □ State MR institution
   □ State MR institution
   □ Hospital
   □ Correctional facility
   □ Homeless
   □ Rest home
   □ Other ____________

66. What is your employment status?
   □ Employed full time
   □ Employed part time
   □ Sheltered employment
   □ Unemployed
   □ Student
   □ Homemaker
   □ Retired
   □ Disabled
   □ Inmate of institution

67. Are you in treatment because you want to be?
   □ Yes
   □ No

Please stop here. Thanks!
Appendix B

Ohio Mental Health Consumer Outcomes System

Scoring Guidelines
Ohio Mental Health Consumer Outcomes System
Scoring Guidelines

The purpose of this document is to describe the rules that should be followed when computing scores associated with the Outcomes instruments. All of the scales listed in this document are included in the Outcomes data specifications and are computed automatically by the ODMH Data Entry and Reports Template except for the Quality of Life – Overall and Overall Community Functioning scales (shaded in gray). These scales are not currently required but it is anticipated that they will be included in the Outcomes data specifications in the future.

Providers should examine the scoring rules provided below and build these rules into the software that they use to collect and store Outcomes data. It is the responsibility of Providers to compute the correct subscale scores at the local level. When a production Outcomes record is received at ODMH, subscale scores are computed again in order to verify that they have been scored accurately. Subscale scores submitted by Providers that differ more than one-tenth (0.1) from the state-generated scores will be replaced with the state-generated score in the statewide database.

A Note About Reverse Scoring
Some items on the adult instruments are worded such that a given response (e.g., "never") represents a desirable or positive response for one question, but a less desirable response for another. In order to compare items or combine items into a numeric subscale, certain items may need to be "reverse scored" for consistency. When reverse scoring an item, the highest and lowest numerical values are substituted for each other, the next highest and next lowest values are substituted for each other, and so on. Keep in mind that items that represent non-scaled values (e.g., missing, not-applicable) should not be included in either reverse scoring or computation of subscales. When reviewing the guidelines, an asterisk indicates that a scale contains one or more reverse scored items, and the actual items that should be reverse scored are bolded.

Example:

<table>
<thead>
<tr>
<th>Four-Point Scale</th>
<th>Four-Point Scale</th>
<th>Five-Point Scale</th>
<th>Five-Point Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Score</td>
<td>Reverse Score</td>
<td>Original Score</td>
<td>Reverse Score</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td>5</td>
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<tr>
<td>2</td>
<td>3</td>
<td>2</td>
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<tr>
<td>4</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Prepared by the ODMH Outcomes Support Team  Page 1 of 7  Revised 11/23/2004
<table>
<thead>
<tr>
<th>Scale</th>
<th>Field Name</th>
<th>Items used to compute score</th>
<th>How to compute score</th>
<th>How to handle missing items</th>
<th>Valid scores</th>
<th>How to interpret score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Life - Financial Status</td>
<td>FINAN</td>
<td>2 - 4</td>
<td>• Sum responses</td>
<td>• If one or more responses are missing, do not compute.</td>
<td>1.00 - 5.00</td>
<td>Higher scores indicate more positive feelings about financial status.</td>
</tr>
<tr>
<td>Empowerment - Self-esteem/ Self-Efficacy</td>
<td>SELFEST</td>
<td>38, 39, 42, 45, 47, 51, 52, 57, 59</td>
<td>• Reverse score the bolded items</td>
<td>• If one response is missing, compute the score using the completed items.</td>
<td>1.00 - 4.00</td>
<td>Higher scores indicate higher self-esteem/self-efficacy.</td>
</tr>
<tr>
<td>Empowerment - Power/ Powerlessness</td>
<td>POWER</td>
<td>40, 41, 43, 49, 50, 54, 55, 56</td>
<td>• Sum responses</td>
<td>• If one response is missing, compute the score using the completed items.</td>
<td>1.00 - 4.00</td>
<td>Higher scores indicate higher sense of power, lower scores indicate sense of powerlessness.</td>
</tr>
<tr>
<td>Empowerment - Community Activism &amp; Autonomy</td>
<td>COMM</td>
<td>36, 44, 53, 58, 60, 91</td>
<td>• Reverse score the bolded items</td>
<td>• If one response is missing, compute the score using the completed items.</td>
<td>1.00 - 4.00</td>
<td>Higher scores indicate higher levels of community activism/autonomy.</td>
</tr>
<tr>
<td>Empowerment - Optimism &amp; Control Over the Future</td>
<td>OPTIM</td>
<td>34, 35, 48, 60</td>
<td>• Sum responses</td>
<td>• If one response is missing, compute the score using the completed items.</td>
<td>1.00 - 4.00</td>
<td>Higher scores indicate higher levels of optimism/control over future.</td>
</tr>
<tr>
<td>Empowerment - Righteous Anger</td>
<td>ANGER</td>
<td>37, 40, 43, 48</td>
<td>• Reverse score the bolded items</td>
<td>• If one or more responses are missing, do not compute.</td>
<td>1.00 - 4.00</td>
<td>Higher scores indicate higher levels of righteous anger.</td>
</tr>
<tr>
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<td>• Reverse score appropriate items</td>
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<td>1.00 - 4.00</td>
<td>Higher scores indicate higher levels of empowerment, lower scores indicate lower levels of empowerment.</td>
</tr>
<tr>
<td>Symptom Distress - Overall</td>
<td>SDS</td>
<td>17 - 31</td>
<td>• Sum responses</td>
<td>• If less than five responses are missing, compute the mean score using the completed items, insert the mean for missing responses, and sum.</td>
<td>15 - 75</td>
<td>Higher scores indicate higher levels of distress, lower scores indicate lower levels of distress.</td>
</tr>
<tr>
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<td>• Sum responses</td>
<td>• If one response is missing, compute the score using the completed items.</td>
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<td>Higher scores indicate more positive feelings about quality of life.</td>
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Appendix C

Descriptive Statistics of Dependent and Independent Variables
## Descriptive Statistics of Dependent and Independent Variables

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<th>Maximum</th>
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<th>Std. Deviation</th>
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### Skewness and Kurtosis of Dependent and Independent Variables

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<td>.55</td>
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<td>Powerlessness</td>
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<td>.73</td>
<td>.61</td>
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<td>Community activism</td>
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<td>5.58</td>
<td>.61</td>
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<td>.62</td>
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N=76
Appendix D

Correlation Matrices of Dependent and Independent Variables
**Pearson r/Cramer’s V correlation matrix with treatment variables**

<table>
<thead>
<tr>
<th></th>
<th>Treatment Completion</th>
<th>Percent Total</th>
<th>All Modules Once</th>
<th>First Module</th>
<th>Percent 1st Module</th>
</tr>
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<tbody>
<tr>
<td>% Total</td>
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<td>% First Module</td>
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<td>.55**</td>
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<td>-.11</td>
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</tbody>
</table>

**correlation is significant at the .01 level**

*correlation is significant at the .05 level

QOL = Quality of Life  
Cells marked with an *a* denote a Cramer’s V statistic. All other statistics = Pearson r
### Pearson r/Cramer’s V correlation matrix with demographic variables

<table>
<thead>
<tr>
<th></th>
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<th>Living Situation</th>
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<th>Education Level</th>
<th>Marital Status</th>
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<tr>
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<td>-.14</td>
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<td>.08</td>
</tr>
<tr>
<td>Powerlessness</td>
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<td>.12</td>
<td>.32(^*)</td>
<td>-.03</td>
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<td>.24(^*)</td>
<td>.00</td>
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<td>-.32(^*)</td>
<td>-.32(^*)</td>
<td>.09</td>
<td>.08</td>
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</table>

** correlation is significant at the .01 level  
* correlation is significant at the .05 level  
QOL = Quality of Life; SE/SE = Self-esteem/self-efficacy  
Cells marked with an \(a\) denote a Cramer’s V statistic. All other statistics = Pearson r
**Pearson r correlation matrix of Adult Outcome Measure Scales**

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<th>RA</th>
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<td></td>
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</tr>
<tr>
<td>FS</td>
<td>.31*</td>
<td>.35**</td>
<td>-.03</td>
<td>.14</td>
<td>.28*</td>
<td>-.12</td>
<td>-.25*</td>
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<tr>
<td>QOL</td>
<td>.41**</td>
<td>.52*</td>
<td>-.05</td>
<td>.16</td>
<td>.31*</td>
<td>-.24</td>
<td>-.49**</td>
<td>.70**</td>
</tr>
</tbody>
</table>

** correlation is significant at the .01 level  
* correlation is significant at the .05 level

QOL= Quality of Life  
SE/SE= self-esteem/self-efficacy  
PL=powerlessness  
CA=community activism  
OPT= optimism  
RA= righteous anger  
SDS= symptom distress  
EP= empowerment  
FS= financial status