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Mental Health Treatment for Children and Adolescents: Cost Effectiveness, Dropout, and Recidivism by Presenting Diagnosis and Therapy Modality

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ABSTRACT

Mental Health Treatment for Children and Adolescents:
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As many as one in five children and adolescents may suffer from a mental health disorder, yet there are barriers that often prevent children from receiving optimal treatment. The current study explores the influence of practitioner license type, therapy modality, diagnosis, age, and gender on mental health therapy for children and adolescents. Data was provided by Cigna, a leading health care insurance provider in the United States. Participants include 106,374 boys (53.2%) and 93,753 girls (46.8%) ages 3 to 18 (M = 12.1, SD = 3.9) who were treated in outpatient facilities throughout the United States of America. Results indicate that there are differences in dropout, recidivism, cost, and treatment length by provider license, therapy modality, diagnosis, age, and gender. Specifically, results suggest that marriage and family therapists have the lowest percent recidivism and are among the lowest in terms of dropout and cost effectiveness. The results also suggest that family therapy is more cost effective than individual or mixed therapy and that mixed therapy has a much lower percent dropout than individual or family therapy. Analysis by diagnosis suggests a potential severity scale based on dropout, recidivism, and number of sessions. There are also significant differences in dropout and recidivism by age suggesting that younger children are more likely to dropout of treatment. These results provide valuable information about mental health treatment of children and adolescents. Specifically, utilizing a family based approach may help reduce the total length of treatment while utilizing a mixed mode approach to therapy may help reduce the risk of dropout from treatment. Also, some diagnoses appear to be more difficult to treat, with higher percentages of dropout and requiring more time and money for successful treatment. Limitations and future directions are discussed.

Key words: child adolescent therapy, mental health license type, therapy modality, family therapy, dropout, diagnosis, recidivism, mixed therapy, retrospective analysis, Cigna, cost, cost effectiveness, number of sessions, treatment length.

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Mental Health Treatment for Children and Adolescents: Cost Effectiveness, Dropout, and Recidivism by Presenting Diagnosis and Therapy Modality

It has been estimated that up to 20% of children and adolescents suffer from a serious mental health disorder (Belfer, 2008). However, most of these children do not receive treatment from a mental health provider (Ani & Garralda, 2005; Kataoka, Zhang & Wells, 2002). Of children who would benefit from mental health services, it has been estimated that between 50% and 75% of them either never present for treatment or fail to complete treatment (Kazdin, Mazurick, & Bass, 1993), which is a significant barrier to effective treatment implementation (Watt & Dadd, 2007). Because mental health issues are pervasive and serious among children, it is important to explore variables that may help with treatment retention and help produce positive treatment outcomes.

Children who struggle with mental health problems have difficulties in many different aspects of their lives (Paster, 1997). They are often disruptive and show behavioral and learning problems in school. They present symptoms in the home. They often have trouble with the law, have health issues, are abused or neglected, and are often socially isolated. Additionally, it has been shown that when children and adolescents struggle with mental health issues, others in the family can also be negatively affected. For example, research suggests that parents of children (ages 10 to 15) who are seeking mental health treatment are more likely to report impact on the family, such as parental well-being, depression, and parental feelings of incompetence (Farmer, Burns, Angold, & Costello, 1997).

It has been suggested that studying the role of early childhood health, including mental health, will improve understanding of larger social issues such as social stratification, wage determination, and intergenerational transmission of inequalities (Palloni, 2006). Palloni also

suggests that "early childhood health matters for achievement of or social accession to adult social class positions" (p. 587).

It has been argued that families are the central foundation of a civilization's social structure (Loveless & Holman, 2007). Supporting families in the act of raising children, promoting active and meaningful community involvement, and helping families care for social, physical, and psychological needs should be a central goal of any society (Huffine & Anderson, 2003). It is, therefore, unfortunate, and potentially destructive to society, that so many families and children do not receive the support and services that they need to flourish.

A recent estimate of the annual cost of mental, emotional, and behavioral disorders in children and adolescence totaled $247 billion (Eisenberg & Neighbors, 2007). Services related to the treatment and care of children with mental health needs are in high demand, and there are struggles related to the decisions about how such resources should be allocated (Stevens, Roberts, & Shiell, 2010). There is pressure from health care systems and policy makers to only fund treatment approaches that are evidence based. This, in turn, leads to competition for limited resources among different mental health professions and psychotherapeutic traditions (for example, medication vs. talk therapies). Additionally, there is a high level of complexity apparent in children's services with multifaceted interventions, multiple agencies and providers that may have various primary objectives or outcomes (Stevens et al., 2010). When considering an investment into improved mental health services for children, it is important to explore the evidence of cost effectiveness. It has been noted that a better understanding of the economic impacts of interventions, along with the potential gains, can help to make decisions about how valuable resources can best be utilized (McDaid, Park, Knapp, Losert, & Kilian, 2010). As a result, it is important for practitioners to be familiar with approaches and modalities that are

effective, efficacious, and cost effective when working with children. The current study explores the influence of practitioner license type (and associated training), and therapy modality (individual, family therapy, or a combination of both) on therapy outcomes for children receiving mental health care services. The design of the current study has a high level of external validity. The sample is nationally representative and is not based on study recruitment; rather, it contains data on what type of treatment children and adolescents are currently receiving in the United States.

Literature Review

A review of literature related to the treatment of childhood mental health issues is here presented. Some of this literature is indirectly tied to the current research project. It should be noted that the indirectly related literature is provided as background and supporting information for the reader.

Differences between children and adults in mental health care. Weisz, Huey, and Weersing (1998) note some important differences between the mental health treatment of adults and children. One difference is that fact that children rarely consider themselves as needing mental health therapy. As a result, most child therapy cases are referred by adults and not by the child. This creates an interesting distinction of having a child as the identified patient with a parent or other adult playing the role of the client. One important implication of this is the inherent systemic inclusion. The child, as an individual, would not likely present to therapy on her own; the larger system acts to bring the child to therapy. This suggests that child therapy is inherently systemic. As a result, it is likely that optimal treatment for children in psychotherapy settings would include various dimensions of larger systemic components.

Another difference between treating adults and children in a mental health setting involves environmental selection (Weisz, Huey, & Weersing, 1998). Children are more captive than adults to a larger systemic environment. As a result, the childhood disorder that is being treated may stem from environmental influences (e.g., school, family) and not from the child. If this is the case, involving the child in individual therapy alone will likely limit the impact of interventions. It is likely that a more effective solution would involve others from the child's social environment, though there are additional challenges that arise from including others in treatment.

Individual based treatment. Literature on empirically based individual treatments suggests various effective interventions for children and adolescents (See Kendall & Beidas, 2007). These include: addressing inaccurate self-perceptions for youth with depression (Stark & Kendall, 1996); role play exercises to address misattribution of intentionality for youth with conduct and aggression problems (Lochman, Powell, Whidby, & Fitzgerald, 2006; Nelson, Finch, & Ghee, 2006); and emotion management and behavior modification for children with internalizing problems linked to anxiety (Kendall, Hedtke, & Aschenbrand, 2006). Evidence for empirically supported treatments for children and adolescents has been found for many disorders including: conduct and aggression problems (Brinkmeyer & Eyberg, 2003; Lochman et al., 2006); depression (Mufson, Dorta, Wickramaratne, Nomura, Olfson, & Weissman, 2004); and anxiety disorders (Kendall et al., 1997; Piacentini, March, & Franklin, 2006). One study found that many children had been involved in several other treatment options before individual psychotherapy was pursued; in some cases it was reported as a feeling of a last resort (Kam & Midgley, 2006). Other research suggests that even though certain treatments have been found to be empirically supported, they are not often used by therapists in regular clinical practice

(Goisman, Warsaw & Keller, 1999). Additionally, when the empirically supported treatments are used in routine clinical practice, the clinical outcomes are not as positive as seen in the evaluative studies (Stewart & Chambless, 2009). Though a comprehensive review of empirically supported, individually based treatments for children and adolescents is outside the scope of the current project, there are many resources for the interested reader (see Kendall, 2011).

Family based treatment. Children represent a unique clinical population. Typically, adults seek mental health services for themselves. Children, however, are usually brought to therapy by parents or a guardian. Parents are also pivotal in deciding the type of treatment that the children receive, as well as, the frequency and number of sessions that the child attends (Bannon & McKay, 2005). Children also encounter additional obstacles to obtaining mental health therapy, such as lack of transportation or lack of child care for siblings (Hahn, 1995; McKay, McCadam, & Gonzales, 1996). Research has also identified perceived barriers to obtaining mental health services. These barriers include issues such as not having time to make it to appointments, a lack of social support, and negative views on potential treatment outcomes (Kazdin, Holland, & Crowley, 1997; Nock & Kazdin, 2001). Other research suggests that children and adolescents from two-parent families are more likely to continue with treatment than those from one-parent families, families with high socio-economic status (SES) are more likely to continue treatment than those from lower SES, and clients who belong to the majority social group are more likely to continue treatment than those from minority groups (Armbruster & Fallon, 1994). As there is a clear systemic influence on children and adolescents receiving mental health services, it is reasonable to suppose that including the family system in treatment would lead to improved outcomes and lower dropout rates.

Research has found that when mental health services are matched with parental

preference for service that the number of treatment sessions attended increases significantly (Bannon & McKay, 2005). These findings suggest that parental involvement in decision making is particularly important for ensuring that children complete treatment. Research looking at behavioral interventions targeted at reducing children's anxiety and increasing compliance prior to anesthesia has shown that interventions that involve parents in the surgical holding area significantly improve the compliance rates of the children (MacLaren & Kain, 2008). Children tend to show less anxiety and distress when a supportive parent is involved in the treatment process. The same would likely be true when children are receiving mental health treatment. Evidence also suggests that treating a depressed family member may result in the improvement of another family member's depressive symptoms (Hughes & Asarnow, 2011). Studies have also suggested a correlation between a parent's and child's adjustment to chronic illness (Lopez, Mullins, Wolfe-Christensen, & Bourdeau, 2008). When parents adjust well to the chronic illness, the child tends to also adjust well. This evidence suggests that increasing family involvement in the child's therapeutic process is advantageous to the mental health treatment.

Not only is there evidence that family involvement is advantageous to children's mental health treatment, there is also evidence that mental health issues in other family members can have a negative effect on a child's mental and physical health (Janicke, Finney, & Riley, 2001). Research suggests that the parent's marital cohesion and life satisfaction are significant predictors of children's health care use. One study found that lower life satisfaction and higher reports of martial cohesion were associated with more use of health care services by the child (Crane, Christenson, Shaw, Fawcett, & Marshall, 2010). One study found that having at least one parent with depression is related to higher emergency department visits, sick visits, inpatient services, and specialist visits across all ages of children (Sills, Shetterly, Xu, Magid, & Kempe,

2007). They also found that children (ages 13-17) had a lower rate of well-child visits when at least one parent suffered from depression. These findings lend evidence to the systemic influence of mental health in the family. They also suggest that treating the family system, rather than just the individual child, may lead to better outcomes for treatment of the presenting problem.

Similarly, literature on family burden discusses the emotional experiences of families that are coping with acute and long term responsibilities related to inadequate systems of treatment and community care (Riesser & Schorske, 1994). Burdens include financial costs, disruptions to family life, worry, a sense of loss, and social isolation. Because the word 'burdens' carries more of a negative tone, some prefer to address these issues in terms of caregiver strain and family impact (Farmer et al., 1997). In fact, some people report that caring for loved ones with special needs actually enriches their lives (Yorgason, Booth, & Johnson, 2008; Yatchmenoff, Koren, Friesen, Gordon, & Kinney, 1998). Enrichment is related to families feeling empowered and having a sense of competence in their own ability to aid in treatment and deal with the symptoms. Families who are well informed about the specific needs related to care, are connected to resources, and have an active role in the treatment of family members with special treatment needs are likely to experience more family enrichment and cohesion than those who are excluded from the treatment process. It thus follows that families who are well informed about the specific needs related to treatment and care of a child's mental health issue are more likely to experience greater cohesion and satisfaction with treatment. Full continuums of family oriented services, including clinical involvement, such as therapy and psychoeducation, as well as non-clinical involvement, such as education and social support, have been recommended to be

available to serve families of individuals who are struggling with mental illness (Marsh & Johnson, 1997).

One education-based intervention is parenting training. Parenting training is a well-known form of family involvement in child centered interventions and is often recommended to help caregivers improve their parenting skills or basic management techniques (Friesen & Stephens, 1998). One such program, which has been empirically studied, is the Triple P-Positive Parenting Program (Sanders, Markie-Dadds, & Turner, 2001; Sanders & Pidgeon, 2005). Research with participants in the Triple P program suggest that mothers show significant improvements in parenting, parenting self-esteem, and reductions in stressors related to parenting (Bodenmann, Cina, Ledermann, & Sanders, 2008). Additional research suggests that parenting programs can increase confidence, improve relationships with children, and help with the implementation of behavioral techniques (Patterson, Mockford, & Stewart-Brown, 2005). While not directly related to the current study, research on parenting programs lends evidence to the utility of including family members in the treatment of children and adolescents; when parents and the larger caregiving system are included in the treatment process, children tend to have better clinical outcomes.

Systems of care that promote family participation and involvement in children's mental health treatment are likely to show better clinical outcomes for the children and their families. A system of care has been defined as "A comprehensive spectrum of mental health and other necessary services which are organized into a coordinated network to meet the multiple and changing needs of children and adolescents with serious emotional disturbances and their families." (Stroul & Friedman, 1986, p. 3). Families become empowered, better equipped to care for their children, and increasingly involved in strengthening the family system (McCammon,

Spencer, & Friesen, 2001). Additionally, mental health treatment that involves the family is likely to show longer lasting results due to the collaborative efforts of the family to modify the family system rather than changing a single component and then placing it back into the same system. When addressing the needs of children who are struggling with mental health issues, a key guiding principle of an effective system of care is that families should participate in all aspects of treatment planning and delivery (Stroul & Friedman, 1996). Family involvement is a critical aspect of successful treatment of and recovery from mental health disorders. The term family typically refers to biological nuclear relations but should also include extended kin caregivers (i.e. grandparents, aunts & uncles, in-laws, etc.), adopted families, and foster families. Some researchers have suggested that the degree to which mental health professionals are able to assist children in reaching their treatment goals depends largely on the amount of true collaboration between the mental health professional and the family (DeChillo, Koren, & Schultze, 1994).

As family members are inextricable components of a child's environment, family involvement in the treatment of children with behavioral problems becomes crucial to treatment success (Friesen & Stephens, 1998). Treatment goals and planning should include the relevant caregivers within the family system. When treating children and adolescents, family members, in addition to the identified patient, should be considered for involvement in treatment, recovery, and the overall change process.

Effectiveness of family/systemic based treatments. Research has demonstrated that systemic based therapy is an effective treatment intervention for various mental health issues and diagnosis for both adults and children. A review of 20 meta-analyses that explored systemic based interventions of mental health issues found that families who entered treatment together

showed better functioning after therapy and at follow-up than did 71% of families in control groups (Shadish & Baldwin, 2003). The average effect size across the meta-analysis studies was .65 after therapy and .52 at follow-up, which occurred 6-12 months later. This review provides further evidence that systemic interventions, including family based treatments, are clinically effective for treating mental health issues. A recent review of literature suggests that family based interventions are helpful for treating children and adolescents who are struggling with a variety of disturbances including: mood disorders, anxiety, attention-deficit hyperactivity, disruptive behavior, pervasive developmental, and eating disorders (Kaslow, Broth, Smith, & Collins, 2012)

Additional evidence shows that systemic interventions for child-based mental health issues are an effective form of treatment. Carr (2009b) created a summary of evidence on systemic treatment for child-focused problems. His review indicates that systemic based interventions, such as family therapy, are clinically effective, brief – usually less than 20 sessions, and can be offered by a range of mental health professionals in outpatient settings. The research shows specific evidence that systemic interventions are effective for treating issues including: behavioral difficulties, ADHD, drug abuse, delinquency, anxiety, depression, grief, bipolar disorder, child abuse and neglect, eating disorders, enuresis, encopresis, infant sleep, feeding, and attachment problems, and poorly controlled asthma and diabetes. Another review of articles concerning family and systemic based treatment approaches suggests that they can be effective treatments for adolescent sex offenders, juvenile delinquency, adolescent anorexia nervosa, and children at risk of out-of-home placement (Carr, 2010).

A study comparing individual psychodynamic psychotherapy and family therapy for the treatment of childhood depression found that both treatment approaches resulted in significant

reductions in disorder rates (Trowell et al., 2007). Of the cases treated with individual psychotherapy, 74.3% were no longer clinically depressed and of the cases treated with family therapy, 75.5% of the cases were no longer clinically depressed. Another study compared the relative long term benefit of family-focused cognitive behavioral therapy and child-focused cognitive behavioral therapy for childhood anxiety disorders (Wood, McLeod, Piacentini, & Sigman, 2009). The results suggest that the children who had been assigned to the family based therapy had lower anxiety scores from diagnostician and parent report scores at a one year follow-up. Family therapy has also been shown to be effective for the treatment of adolescents with anorexia nervosa (Lock & Fitzpatrick, 2007). In a qualitative analysis of why parental involvement enhances the effectiveness of treatment for anorexia nervosa, researchers found that parent-to-parent consultations were viewed as intense emotional experiences that helped parents reflect on changes in the family interactions, feel less isolated, and feel empowered to continue treatment (Rhodes, Brown, & Madden, 2009).

There is also empirical evidence for specific family based treatment models. Functional Family Therapy has been identified as an effective, evidence-based intervention by several reviews (Alexander & Sexton, 2002; Waldron & Turner, 2008). Multisystemic Therapy, a family based treatment model, has been shown to be effective and efficacious for treating children and adolescents with studies dating back 35 years (see Henggeler, 2011). Empirical evidence suggests that it is effective for treating adolescent sex offenders, delinquency, substance abuse, externalizing symptoms, and out-of-home placements (Curtis, Ronan, Heiblum, & Crellin, 2009; Henggeler et al., 2009; Letourneau et al., 2009) and Dyadic Developmental Psychotherapy has also been presented as an effective and evidence-based treatment for children and

adolescents (Becker-Weidman & Hughes, 2010). In summary, there is considerable evidence to suggest that family based treatments are effective for the treatment of children and adolescents.

Combination of individual and family therapy. Studies have also explored the benefits of combining individual and family sessions over the course of treatment. Combining individual and family based sessions when working with children and adolescents is a treatment approach that has received some attention over the years. Feldman (1988) presented an integrative approach of family and individual based sessions together with clinical examples. Guidelines for deciding when to use concurrent individual and family therapy as a treatment modality have been presented by Racusin and Kaslow (1994). Josephson and Serrano (2001) discussed how individual and family based therapies can be seen as complementary rather than separate and competing. Another model combines two successive individual sessions, followed by one family session, for the treatment of sexual behavior problems (Etgar & Shulstain-Elrom, 2009). The family sessions in this model include the child, both parents, and sometimes siblings. The authors note the importance of including family therapy for the treatment of children in this population. Other research concerning attention deficit hyperactivity disorder has suggested the necessity of using a combination of individual psychotherapy and family based treatment modalities (Stubbe & Weiss, 2000). While many have suggested the utility of using a combination of individual and family based psychotherapy approaches to treatment with children, no studies were found that test the outcomes of a mixed modality compared to individual psychotherapy or family therapy. When research addresses both modalities in a single paper it is usually to compare the outcomes of each to the other rather than explore the benefits of combining both together (see Hughes & Asarnow, 2011). There is a clear need for outcome

research that combines individual and family sessions in the treatment of children and adolescents.

Differences by license type. In addition to differences in therapy outcomes between family based and individual based treatments, there is some evidence that the provider license type may influence treatment outcomes. One study found differences across license types for dropout rates, recidivism rates, and cost effectiveness for mental health treatment in general (Crane & Payne, 2011). Specifically, they found that professionals with marriage and family therapy licenses, which require specific training in family therapy, had lower recidivism rates. Another study found differences across license types for outcomes of family based treatments (Moore, Hamilton, Crane & Fawcett, 2011). The results suggest that licensed marriage and family therapists had lower dropout and recidivism rates, compared to other licenses, when providing family therapy. Other research suggests that there may be differences by professional license in terms of the accuracy of diagnosing sexual abuse (Shumaker, 2000). Some of these differences may be explained by differences in educational training and general approaches to therapy between the professional licenses. For example, in a content analysis of literature on clinical licensure programs, it was noted that marriage and family therapists are required to complete at least three times more family therapy coursework than clinical psychologists, psychiatrists, psychiatric nurses, professional counselors, and social workers (Crane, Shaw, Christenson, Larson, Harper, & Feinauer, 2010). They also noted that marriage and family therapists must complete 16 times more supervised face-to-face therapy hours than any of the other professions. These are only a few examples of differences in training and license requirements between mental health professions. It is possible that differences in professional training and licensing requirements will likely result in some differences in treatment outcomes.

Learning about differences in treatment outcomes between professional license types may help to discover specific benefits for working with children within the different training approaches.

Drop out and recidivism. Dropout and recidivism are commonly used as measures of treatment outcome. Therapy dropout, defined as terminating mental health treatment prior to its completion, is a primary obstacle to providing effective mental health services to children and families (Nock & Kazdin, 2001). Estimates of dropout rates for child and adolescent treatment range from 28% to 75% (Kazdin, Mazurick, & Siegel, 1994; Lai, Pang, Wong, Lum, & Lo, 1998). Dropout presents problems related to the quality of mental health care, cost of treatment, and treatment outcome research. It consumes valuable time and financial resources related to the intake, assessment, and administrative costs that may be utilized by other children and adolescents who are in need of these services (Armbruster & Kazdin, 1994; Masi, Miller, & Olson, 2003; Prinz & Miller, 1994). It also leaves many children and adolescents with untreated mental health problems. Untreated problems, such as these, leave the children and adolescents vulnerable to immediate and long-term personal, familial, and social difficulties (Farmer et al., 1997). Also, children and adolescents who do not complete mental health treatment are less likely to show improve in their symptoms than clients who complete their treatment (Kazdin, Mazurick, & Siegel, 1994; Prinz & Miller, 1994). As such, dropout from treatment is related to the efficacy of the treatment (Johnson, Mellor, & Brann, 2008). Thus, understanding, predicting, and preventing therapy dropout are important issues for child mental health practitioners and services.

Researchers have noted that there are some discrepancies and problems with operational definitions for dropout from mental health treatment (Johnson et al., 2008). The use of different operational definitions of dropout can make comparisons across studies difficult and confusing.

Studies generally refer to dropout as termination of treatment prior to treatment completion. It is, however, difficult to define and measure the moment when mental health treatment is complete. One common operational definition of dropout involves using a cut-off number of sessions. Clients who attend fewer sessions than the cut-off number are considered as dropouts. Clients who attend more sessions than the cut-off are considered to complete treatment. Dropout has also been measured as failing to attend appointments that have been scheduled and not returning for additional treatment. It has been noted that while this method may be reliable, it does not consider a client as a dropout if they make their intention to not return explicit by not scheduling a future appointment (Johnson et al., 2008). Thus, this method does not fully capture the measurement of dropout.

In addition to differences in operational definitions of treatment dropout, there are also different reasons for which children, who are receiving mental health services, terminate treatment. Research on why youth and adolescents dropout of therapy has found that therapeutic relationship problems accounted for the most variance in a factor analysis (Garcia & Weisz, 2002). Utilizing the 41 item Reasons for Ending Treatment Questionnaire (RETQ), the study identified that participants reflected concerns that therapists did not appear to be doing the right things, they were not addressing the right problems, they were not talking enough with family members, or they were not helping the child. Other factors for dropout included family issues such as transportation problems or ill family members. Financial issues, time and effort required to get to appointments, and perception of the need for treatment were also variables that influenced dropout for children and adolescents. The study identified therapeutic relationship as the only non-financial related variable that distinguished dropouts from those who completed therapy.

Other research suggests that parent expectancies for therapy help predict completion of mental health treatment. A study by Nock and Kazdin (2001) involving 405 children and their parents looked at the relationship between parent expectancies for therapy and early termination. They found that parents with lower expectancies of therapy had higher barriers, such as obstacles to coming to therapy, perceptions that treatment is irrelevant and too demanding, and poor relationships with the therapist. These barriers often prevented the parents from bringing the child to therapy. They also found evidence for a curvilinear relationship between expectancies and therapy attendance; parents with very high and very low expectations for therapy attended the highest number of sessions and were least likely to drop out of treatment. Research suggests that therapist's concern and the fit of treatment were important factors for helping clients stay in treatment (Allgood & Crane, 1991) Other research related to parental influences on drop out suggests that parent age and marital status also have an influence on dropout (Kazdin et al., 1993). Specifically, younger mothers and single mothers of children being treated for conduct disorder are more likely to have children dropout of treatment.

Research has identified factors related to attrition from treatment of child and adolescent mental health treatment. These factors include: socio-economic status, referral sources, geographical distance to services, minority status, pathology attributed to parent figure, previous treatment attempts, and waiting for services to begin (Armbruster & Kazdin, 1994; Kazdin, Mazurick, & Bass, 1993; Luk et al., 2001). Another study found that the number of children in a family influences the likelihood of dropout (Allgood & Crane, 1991). The study found that a family was more likely to stay in therapy as the number of children in the family increased. The study also found that people attending conjoint therapy for an individual problem were more likely to drop out of therapy.

Most dropout research for children and adolescents has explored the phenomenon from an individual therapy modality. Relatively little research has explored differences in dropout rates when comparing individual and family therapy modalities. One study found no differences in dropout rates between three therapy modalities: individual, couple, and family therapy (Masi, Miller, & Olson, 2003). The study compared differences using three different operational definitions of dropout: a minimum cut-off number, therapist judgment of clients dropping out, and treatment ending before the therapeutic goals were met. The results of the study found no differences in dropout rates by therapy modality. One primary limitation of the study was that it was a sample of data from only one (training) clinic. The current study will compare dropout rates for children and adolescents using a large sample with participant data treated by professionals with different license types and from different treatment facilities across the United States.

As no one factor has been identified as being sufficient to predict treatment dropout for children and adolescents, there may be a more complex influence of multiple factors that contribute to an increased likelihood of premature termination of treatment (Kazdin, Holland, & Crowley, 1997). Also, though many factors have been associated with dropout from therapy, it is important to consider multiple possibilities. There is limited information exploring the influence of provider license and therapy modality on dropout rates for children and adolescents.

The diagnosis that a child receives will also influence their chance of dropping out of treatment. Individuals with the same diagnosis tend to share specific characteristics related individual functioning and social interactions. It is reasonable to assume that children who share the same diagnosis will likely have similar dropout rates and that differences in dropout rates between diagnoses may be found. Previous research on dropout by diagnosis suggests that

dropout is higher among conduct disorder clients than among individuals with other diagnoses (Armbruster & Kazdin, 1994). Other research suggests that children with behavioral problems, such as aggression, antisocial behavior, and delinquency, are more likely to drop out of treatment (Dickens & Campbell, 2001; Dierker, Nargiso, Wiseman, & Hoff, 2001; Kazdin et al., 1994; Kazdin & Mazurick, 1994). Another study by Johnson et al. (2008) suggests that children and adolescents who were diagnosed with eating disorders (71%), conduct disorder (63%), ADHD (58%), or family problems (62%) have the highest dropout rates when compared to other diagnoses. Children with anxiety disorders (39%), and no diagnosis (21%), were less likely to dropout. Despite differences in diagnosis, generally, dropout from mental health services among youth tended to be high (49%). As differences in dropout rates between diagnoses have been shown previously, it will be important to explore additional factors that may contribute to childhood dropout from treatment.

In addition to early termination being a barrier for children in need of mental health services, recidivism is also an important area of concern for measuring treatment outcome. Recidivism refers to clients returning for additional treatment following an episode of care where the clients were treated for the disorder. One underlying assumption of recidivism is that the longer a client can continue without follow-up treatment, the more efficacious or successful the previous treatment is considered (Hafemeister & Banks, 1996). Thus, lower recidivism rates are assumed to be associated with a more effective treatment.

Recidivism is related to issues such as additional costs for treatment, improvement for the individual client, and additional burdens placed on families, as well as, community resources. As such, it is important to try to understand what the major influences are for recidivism rates for outpatient treatment with children and adolescents. In a study exploring the methodological uses

of recidivism rates to assess mental health treatment, Hafemeister and Banks (1996) noted that there are some complexities related to using recidivism as a treatment outcome measure. One potential problem is that it is not always possible to identify the exact causal factors that may be contributing to the recidivism rates. Additional factors should be controlled for where possible. Another danger that they note is the use of recidivism rates from a single time point without comparisons from other similar treatments. While there are some potential problems, the authors noted some potential advantages of using recidivism as an outcome measure for a treatment program. One is that recidivism rates can provide an accurate description of the performance of a mental health program or a more general mental health system of care. Recidivism provides a nice comparison of performance over time to similar treatment options.

Previous research exploring recidivism rates has shown lower recidivism for clients who were seen by marriage and family therapists (13.4%) compared to nurses (14.2%), professional counselors (14.4%), medical doctors (14.5%), social workers (15.7%), and psychologists (15.8%) (Crane & Payne, 2011). The study also found that recidivism rates were lowest for individual therapy (14.9%), followed by family therapy (15.4%) and a combination of individual and family therapy sessions (17.6%). These results were comparisons of consumers of therapy in general and are not specific to one age group or diagnosis. Additional research is needed to understand the differences in rates specific to children and adolescents.

Dropout and recidivism are treatment outcome measures that may indicate problems in the treatment process. Previous research literature supports the use of these variables in outcome studies. While there are differences in how they are operationally defined, these measures can help provide useful information for mental health treatment delivery.

Cost effectiveness research with children and adolescents. Cost effectiveness refers to a balance in the cost and effectiveness of a treatment approach. A treatment that costs less than another but is equally effective is considered to be more cost effective. Similarly, a treatment approach that costs more but also has a higher level of effectiveness may be considered more cost effective even though it is more expensive. Finding treatments that are cost effective is important because they offer the best balance between conserving valuable, limited resources, alleviating suffering, and providing effective treatment.

It has been noted that cost effectiveness is an ethical concern (Blount, 1987). Often, more effective treatments have higher delivery costs associated with them. However, decisions made regarding the treatment of children are usually made in settings where there are limited resources that must be spread out among many who are in need of services, rather than being concentrated on a single individual. Thus, it is not plausible that every child will receive the most efficacious treatment because it would be too taxing on available resources. Also, practitioners do not necessarily use a treatment just on the basis that it has been found to be efficacious. Additionally, it is not reasonable to simply treat clients with the least expensive treatment available because it is available, especially if the treatment is not effective or efficacious. There are also limits to the generalizability of efficaciousness to non-controlled, real world settings. The ethical balance involves providing treatment options that provide positive outcomes and have reasonable costs.

Previous cost effectiveness research with mental health care usage for children suggests that there are multiple factors that need to be considered. A study exploring cost effective treatment options for children with ADHD suggests that high costs do not necessarily rule out cost effectiveness (Foster et al., 2007). Some treatments that have higher costs also have more

long term benefits. For example, including behavioral therapy in the treatment of ADHD in children may help avoid future costs associated with the disorder such as juvenile justice. The researchers also suggest that treatments may be more likely to be cost effective when they are carefully targeted to the individual situation of the child being treated rather than having a blanket treatment that is cost effective for all situations. These findings are supported by additional research that suggests that treating depression in children utilizing group cognitive behavioral therapy (CBT) is more cost effective than individual CBT but less cost effective for treating drug and alcohol dependence, anxiety, and social phobias (Tucker & Oei, 2007). Other research suggests that community based multi-systemic therapy is more effective and less expensive than hospital treatment for children (Sheidow et al., 2004). A study exploring the costs of including family therapy to the treatment program for youth from a low SES, who struggle with conduct disorder, found that costs did not increase (Crane, Hillin, & Jakubowski, 2005). The researchers also found that youth who utilized in-home family therapy utilized fewer medical services. The results suggest a possible advantage of family based treatment for lowering overall health care and mental health care costs. Additionally, a study comparing CBT to family therapy for the treatment of adolescents with eating disorders found a slight advantage in the immediate effectiveness for CBT (Schmidt et al., 2007). Though no significant differences were found in terms of cost, the authors concluded that CBT is, because of the immediate effectiveness advantage, more cost effective than family therapy for treating eating disorders.

A study exploring cost effectiveness on mental health disorders in general found significant differences by provider license type and therapy modality (Crane & Payne, 2011). The results showed that professional counselors were the most cost effective, followed by

marriage and family therapists and medical doctors, then social workers, nurses, and psychologists. Additionally, in terms of therapy modality, family therapy was found to be the most cost effective, followed by individual therapy, with a mixed mode being the least cost effective. Given such evidence, it is important to explore additional treatment provider characteristics and approaches to treatment that may be more or less cost effective for children and adolescents.

In a recent review of cost effectiveness research published between 2002 and 2009, it was noted that the majority of studies focus on treatment for ADHD, conduct disorder, and eating disorders (Kilian, Losert, Park, McDaid, & Knapp, 2010). Other significant disorders, such as depression or anxiety, were covered by only a single article. In another recent review of cost effectiveness for family based treatments for substance abuse it was noted that while many family based treatments are clinically effective, and while some have been shown to be more cost effective than other individual based treatments, additional work may be needed to improve their cost effectiveness, such as distinguishing the weight of high effectiveness versus low cost, consistency in outcome measures used, and emphasizing systemic influences and costs (Morgan & Crane, 2010). Thus, there is a need for additional research that explores outcomes, such as cost effectiveness, for various diagnoses and treatment modalities to help fill this significant gap.

In summary, there are important differences in the treatment of mental health issues between children and adults. Treatment dropout, recidivism rates, and cost effectiveness are variables that are often used to study mental health treatment outcome. Additionally, provider license type and therapy modality may influence treatment outcomes. There is a need for continued research on treatment outcomes for children with mental health issues. The current study explores some of these important issues.

The current project. Recent research has noted that evidence on economic issues for children's mental health care is often scant and difficult to find (Stevens et al., 2010). In addition, it can be difficult to interpret the results of studies that have been done. Weisz, Huey, and Weersing (1998) note some significant limitations of much of the child psychotherapy outcome research, including non-representative samples and treatment conditions, homogeneous samples, the fact that participants were often actively recruited for treatment and were not actually unsolicited clinical cases, and exclusive adherence to a specific treatment technique on the part of the therapist. The design of the current research project addresses some of these suggested limitations. For example, the sample is not homogeneous; it includes a wide range of presenting problems. The sample is sufficiently large and regionally diverse to be considered a representative sample. Participants in the current study were not recruited based on specific inclusion criteria; they were all clinical cases form a national health insurer over a six year period. The mental health professionals in the current study did not adhere to a specific, structured treatment technique. Thus, the current study provides a high level of external validity to add effectiveness evidence to existing research.

Previous studies have shown a wide range of dropout rates for youth and adolescents with rates ranging between 28% and 75% (Armbruster & Schwab-Stone, 1994; Kazdin, Mazurick, & Siegel, 1994; Lai, Pang, Wong, Lum, & Lo, 1998, Sirles, 1990). These studies may have such differing dropout rates because of their limited sample demographics. The studies utilized convenience samples at local outpatient clinics. Also, these studies had dropout data from significantly fewer participants, ranging between 235 and 555, compared to the 200,210 participants included in the current study. The current study will explore overall dropout rates for children and youth and compare them to previous results for their peers as well as for adult

populations. The current study will also explore differences in dropout rates between license type of the practitioner, as well as, the therapy modality used in treatment. Exploring differences between license types is intended as a means for discovering potential advantages from the various profession backgrounds rather than to show superiority of professional license type. The differences in therapy modality are to help provide information about the advantages inherent in treating children individually or with other family members.

Previous research on child and adolescent mental health dropout has also noted that dropout rates differ by diagnosis (Johnson, Mellor, & Brann, 2006). Children with family problems, ADHD, and conduct disorder have higher dropout rates. The current study will compare child and adolescent dropout by diagnosis to provide additional information in this area of study. It is predicted that dropout rates will differ by diagnosis and that those diagnoses that tend to be more taxing on the family will add to the barriers to therapy and thus have higher dropout rates. As discussed, children and youth face additional barriers to therapy attendance (Bannon & McKay, 2005; Nock & Kasdin, 2001). As a result, it is predicted that dropout rates for children and youth will be higher than those that have been found for adults. Previous studies have not looked specifically at mental health treatment dropout rates for children and adolescents by therapist license type. The current study will explore these differences. It is hypothesized that differences will exist for child and adolescent dropout rates when comparing therapist license type.

Research Questions

The purpose of the current study is to determine the relationship between different types of professions who provide mental health care services to children in the form of individual and family therapy. The following research questions will be addressed:

Question 1. What are the differences in outcomes (dropout, recidivism, number of sessions, cost, cost per session, and cost effectiveness) when comparing license type (medical doctor, master's nurses, psychologists, master's social workers, marriage and family therapists, and professional counselors)?

Question 2. What are the differences in outcomes when comparing therapy modality (individual, family, and mixed mode)?

Question 3. What are the differences in outcomes when comparing diagnosis?

Question 4. Is there a relationship between the diagnoses and license type? In other words, do different professions tend to treat certain diagnoses for children and adolescents more frequently than other professions?

Question 5. Is there an interaction between diagnosis and license type when considering therapy outcomes? Because of differences in training, some practitioners may be better prepared to deal with certain diagnoses or provide family versus individual therapy.

Question 6. What are the differences in outcomes when comparing age and gender for the treatment of children and adolescents?

Method

Design

The current study is a retrospective design utilizing administrative data from Cigna a leading health care insurance provider in the United States. Cigna manages hundreds of health care plans, serving several million patients. Data from six years (2001-2006) of psychotherapy claims were included in the current study. An entry in the data set represented a single claim by a mental health care provider. Each entry included the following information: a unique client identification number, client age, client sex, treatment date, state where service was provided,

current procedural terminology (CPT) code, primary DSM IV diagnosis, therapist license type, highest degree held by therapist, dollar amount of claim, and number of therapeutic sessions per claim.

Use of retrospective administrative data for the purposes of providing information for planning purposes, compiling aggregate statistics, and monitoring trends in the data is allowed by the Health Insurance Portability and Accountability act of 1996 (HIPPA). Prior to the data being delivered from Cigna, all patient and provider identification information was removed and a unique client identification number was assigned for each patient. It was not possible at any time to identify any subscriber or provider information from the data provided. Research on retrospective administrative data falls under the exempt status for the Institutional Review Board (IRB). In compliance with IRB guidelines, exempt status for the current study was confirmed prior to its completion.

Sample

Participants. Participant data from 200,210 children ages 3 – 18 (M = 12.1, SD = 3.9) were used in the current study. A power analysis using G*Power 3.1.2 (Faul, Erdfelder, Lang & Buchner, 2007) revealed that the sample was sufficiently large to find an effect size for both a chi square analysis and analysis of variance. Because of the difficulty in establishing validity in diagnosing disorders in infants and young children (Scheeringa, Peebles, Cook, & Zeanah, 2001), participants under the age of 3 years were excluded from the current study. Participants included 106,374 boys (53.2%) and 93,753 girls (46.8%). Data from all 50 U.S. states were included in the study.

Procedure

Data cleaning. The raw data set provided by Cigna included all outpatient psychotherapy claims from 2001 – 2006. The data was cleaned to exclude claims that contained multiple sessions per claim, claims that reported a refund to Cigna, and claims that were unpaid.

The original data set included 93 different therapeutic licenses. In order to compare outcomes by license type, professional licenses were sorted into groups. Professions that are not nationally recognized as independently licensed mental health care providers were excluded from the data set. Claims that had an unknown license type or that had a license listed as a general mental health practitioner were also exclude from the final data set. To avoid potential confounds, providers with multiple license were excluded from the data set. Additionally, clients who saw therapists of more than one profession type were excluded from the analyses. Practitioners were grouped into six profession types: medical doctor, master's nurses, psychologists, master's social workers, marriage and family therapists, and professional counselors. For complete data cleaning procedures see Crane and Payne (2011).

Definitions

Episode of Care (EoC). An EoC is defined by Cigna as a continuous series of services for the same patient. An EoC begins with the first psychotherapy service and ends after the patient has had no psychotherapy claims for 90 days. The number of sessions in the first EoC in the data set ranged from 1 to 326 (M = 5.5, SD = 7.7). Over 84% of the patients completed therapy within the first EoC, resulting in no recidivism.

Therapy modality. Therapy modality refers to who is included in the treatment process. The current project includes three modalities: individual, family, and mixed. Individual therapy is psychotherapy with a single identified patient in the therapy room with the therapist. Family

therapy refers to the inclusion of at least one additional person in the therapy room with the identified patient and therapist. In the case of childhood issues, this is typically a family member or legal guardian. Mixed therapy refers to a treatment that includes both individual and family sessions during a single EoC. The claims for psychotherapy services were classified by providers using the Current Procedural Terminology (CPT) codes of individual psychotherapy therapy (90806) or family psychotherapy therapy (90847; American Medical Association, 2006).

Diagnoses. Diagnoses were assigned by providers using criteria from the *Diagnostic and Statistical Manual of Mental Disorders-IV-TR* (DSM-IV-American Psychiatric Association, 2000). Diagnoses were sorted into ten categories: adjustment disorders (n = 22,725), anxiety and PTSD (n = 21,260), disruptive behavior (n = 13,586), dissociative disorders (n = 121), eating disorders (n = 968), mood disorders (41,832), relational problems (n = 772), schizophrenic/psychotic (n = 25), substance use and abuse (n = 2166), and other diagnoses (n = 96,755).

Cost. This is the amount in dollars paid by Cigna for therapeutic services. Because mental health services have great variability in the number of sessions provided for treatment, cost per session and total cost for treatment are distinguished. Cost per session was calculated as total cost divided by the total number of sessions in that EoC.

Cost effectiveness. This is an estimation of what psychotherapy costs per patient taking into account the relative success rates associated with each discipline. Cost effectiveness is computed as: Estimated cost effectiveness = EoC cost + (Number of sessions in the EoC * Recidivism rate). The cost effectiveness equation takes into consideration the average number of sessions in the EoC, the cost of providing the EoC, and the outcome of care in the EoC. This

method of evaluating cost effectiveness has been used in previous research (Crane & Payne, 2011; Moore, Hamilton, Crane, & Fawcett, 2011)

Dropout. For the current study, dropout was operationally defined as not returning for additional treatment sessions following a single treatment session. Because mixed mode therapy is defined as attending at least one session of individual therapy and at least one session of family therapy, dropout for mixed mode therapy was calculated as not returning to treatment after attending only one session of individual and one session of family therapy. When making comparisons for dropout rates between therapy modality (individual, family, and mixed), dropout was calculated as not returning following two sessions.

Types of treatment services. Outpatient therapy is the most commonly utilized mental health service for children (Kutash & Rivera, 1996). Outpatient therapy is typically conducted by psychologists, psychiatrists, social workers, counselors, and family therapists and is performed in a variety of settings including: community mental health centers, private clinics, and hospitals. A clear advantage to outpatient therapy is that it allows the child to remain in her home, school, and community while receiving mental health services. This also allows the child to remain with familial and social support in familiar surroundings. Other treatment options that are used with children and adolescents include: inpatient/residential treatment, day treatment facilities, and home based services. Though there is a wealth of research on these additional treatment options, the current study consists of data only for outpatient therapy.

Recidivism. In medical treatment, recidivism is often referred to as a recurrence of a disease or relapse to a previous mode of behavior (Mackie et al., 2001; Whitson, Heflin, & Burchett, 2006). In the current study, recidivism is operationalized as a participant returning to

therapy for additional EoC(s) with the same type of provider (Crane & Payne, 2011; Fawcett & Crane, In press).

Number of sessions. This variable is defined as the total number of sessions for a patient during a single EoC.

Analysis. For the independent variables professional license, therapy modality, age, and diagnosis, the continuous ratio data, including cost, number of sessions, and cost effectiveness, were analyzed using analysis of variance (ANOVA), and analysis of covariance (ANCOVA). A two sample t-test was used to analyze the differences by gender. Differences between the dichotomous dependent variables, including dropout and recidivism, were analyzed using chi-square test for independence. Analyses involving cost and treatment length were conducted with dropout cases excluded.

Results

The first research question is what are the differences in outcomes when comparing license type? Analysis of the first research question showed a statistically significant difference in percent dropout by professional license type χ^2 (5, 200210) = 990.3, p < .001. Medical doctors showed the highest percent dropout, followed by psychologists, nurses, professional counselors, marriage and family therapists, and social workers. Results can be seen in table 1. Analysis indicated that all cells in the chi square analysis met the minimum expected count. Analysis also showed a statistically significant difference in recidivism rates by professional license type χ^2 (5, 200210) = 95.6, p < .001. Social workers had the highest percent recidivism, followed by medical doctors, nurses, psychologists, professional counselors, and marriage and family therapists. Percentages can be found in Table 1. Results again indicated that all cells in the chi square analysis met the minimum expected count. Analysis also showed a statistically

significant difference in number of sessions by professional license type F (5, 166273) = 20.3, p < .001. Tukey post-hoc analysis indicated that, with dropouts excluded, counselors had the lowest average number of sessions, followed by marriage and family therapists, psychologists, medical doctors, nurses, and social workers. Post-hoc results can be found in table 3. Analysis revealed that some of the data was positively skewed, which violates the assumption of normality for an analysis of variance. The positively skewed variables were log transformed prior to the statistics being calculated. While the log transformed data were used for the analysis, both the raw and log transformed data are included in the tables. Also, as practitioners with a doctorate degree tend to be reimbursed at a higher rate than practitioners with a master's degree, the highest earned degree for the practitioner was used as a control variable. Analysis of covariance also showed a statistically significant difference in treatment cost per session F (5, 166273) = 6155.1, p < .001. Tukey post-hoc analysis showed that professional counselors (M = \$44.65), and social workers (M = \$44.78) had statistically lower cost per session (*M diff* = -.13, *std. error* = .09, p = .70), followed by marriage and family therapists (M = \$45.32) then nurses (M = \$52.62), psychologists (M = \$54.81), and MDs (M = \$72.68) cost the most per session. Complete post-hoc results can be found in table 3. Results from the ANCOVA indicated a statistically significant difference in total cost of treatment by license type F (6, 166272) = 408.4, p < .001. Pairwise comparisons showed that counselors (M = 374.73) and marriage and family therapists (M = 384.15) had the lowest total costs (*M diff* = -9.42, p = .07), followed by social workers (M = 405.50), then psychologists (M = 446.50) and nurses (M = 454.01; *M diff* = 7.51, p = .62), and finally medical doctors (M = 571.54) had the highest total cost. Results also indicated a difference in cost effectiveness by profession F (5, 166273) = 247.6, p < .001, with professional counselors (M = 386.13), marriage and family therapists (M = 395.68; *M diff* = -9.54,

p = .07) being the most cost effective, followed by social workers (*M* = 406.13), then nurses (*M* = 466.78) and psychologists (*M* = 458.56; *M diff* = 7.62, p = .63), and MDs (*M* = 583.91). Complete analysis results can be found in table 2.

Table 1 about here

Table 2 about here

Table 3 about here

The second research question is what are the differences in outcomes when comparing therapy modality? Analysis of the second research question showed a statistically significant difference in percent dropout by therapy modality χ^2 (2, 20210) = 19253.6, p < .001. Results of the second research question can be found in table 1. Family therapy showed the highest percent dropout, followed by individual therapy, and mixed mode therapy. Results indicated that all cells in the chi square analysis met the minimum expected count. Analysis also showed a statistically significant difference in recidivism rates by therapy modality χ^2 (2, 200210) = 14550.7, p < .001. Mixed mode therapy had the highest percent recidivism, followed by individual therapy, and family therapy. Results again indicated that all cells in the chi square analysis met the minimum expected count. Analysis also showed a statistically significant difference in number of sessions by therapy modality *F* (2, 166276) = 5518.1, p < .001. Tukey post-hoc analysis showed that family therapy (*M* = 5.61) had the lowest average number of sessions, which was significantly less than the average number of sessions for individual therapy (*M* = 7.31; *M diff*. = 1.70, *std. error* = .06, p < .001)., which was significantly less than the averages for mixed mode (*M* = 11.70; *M diff*. = -6.09, *std. error* = .07, p < .001). Analysis of variance showed a statistically significant difference in total cost of treatment by therapy modality *F* (2, 166276) = 4366.8, p < .001. Post hoc analysis showed that, on average, family therapy (*M* = $281.30) cost less than

individual therapy (*M* = $361.68; *M diff*. = 80.37, *std. error* =3.59, p < .001), which cost less than mixed mode therapy (*M* = $584.56; *M diff*. = 303.26, *std. error* = 3.91, p < .001). Analysis of cost per session showed almost no difference between individual therapy (*M* = $48.64), mixed mode (*M* = $49.16), and family therapy (*M* = $49.78). Results also indicated a difference in cost effectiveness by profession *F* (2, 166276) = 4449.5, p < .001, with Tukey post-hoc analysis showing that family therapy (*M* = 287.96) was the most cost effective, followed by individual therapy (*M* = 371.66; *M diff*. = 83.71, *std. error* = .06, p < .001), and mixed mode being the least cost effective (*M* = 603.16; *M diff*. = -231.50, *std. error* = 2.79, p < .001). Complete analysis results can be found in table 2.

The third research question is what are the differences in outcomes when comparing diagnosis? Analysis of the third research question showed a statistically significant difference in percent dropout by diagnosis group χ^2 (9, 200210) = 684.3, p < .001. Results of the third research question can be found in table 4. Relational diagnoses showed the highest percentage of dropouts, followed by substance use and abuse, other diagnoses, adjustment disorders, disruptive behavior, schizophrenic/psychotic, dissociative disorders, anxiety disorders, mood disorders, and eating disorders with the lowest percent dropout. Results indicated that all cells in the chi square analysis met the minimum expected count. Analysis also showed a statistically significant difference in recidivism rates by therapy modality χ^2 (9, 200210) = 350.4, p < .001. Schizophrenic/psychotic had the highest percent recidivism, followed by eating disorders, dissociative disorders, mood disorders, anxiety and PTSD, other, disruptive behavior, adjustment disorders, substance use and abuse and relational problems. Results again indicated that all cells in the chi square analysis met the minimum expected count. Analysis also showed a statistically significant difference in number of sessions by diagnosis *F* (9, 166269) = 133.1, p < .001. Tukey

post hoc findings showed that relational diagnoses had the fewest number of sessions, followed by substance abuse, adjustment disorders, other, disruptive disorders, dissociative disorders, anxiety disorders, mood disorders, eating disorders, and schizophrenia. Post hoc analyses for the third research question can be found in table 5. Analysis of variance showed a statistically significant difference in total cost of treatment by diagnosis F (9, 166269) = 115.3, $p < .001$. Post hoc analysis showed that relational diagnoses had the least total cost, followed by substance abuse, adjustment disorders, other, disruptive disorders, dissociative disorders, anxiety disorders, mood disorders, eating disorders, and schizophrenia. Analysis of variance also showed a difference in treatment cost per session by therapy modality F (9, 166269) = 11.5, $p < .001$. Tukey post hoc results showed that, on average, relational diagnoses cost less per session followed by adjustment disorders, schizophrenia, mood disorders, other, disruptive disorders, anxiety disorders, substance abuse, eating disorders, and dissociative disorders. Results also indicated a difference in cost effectiveness by diagnosis F (9, 166269) = 115.6, $p < .001$, with Tukey post hoc analysis showing relational problems as being significantly more cost effective to treat than substance abuse, adjustment disorders, other, disruptive disorders, and dissociative, which were significantly more cost effective than anxiety disorders, and mood disorders. Eating disorders and schizophrenia were the least cost effective.

Table 4 about here

Table 5 about here

The fourth research question was related to the relationship between the diagnoses and license type. Analysis of the relationship between diagnosis and license type suggests that certain professions tend to treat certain diagnoses more often than others χ^2 (45, 200210) = 1874.5, $p < .001$. Table 6 provides a summary of the proportions. On average, medical doctors and nurses

treat a lower percentage of adjustment disorders than other license types, nurses treat a higher percentage of eating disorders, psychologists treat a lower percentage of mood disorder cases, marriage and family therapists treat a higher percentage of relational disorders, and social workers treat a higher percentage of substace abuse cases. Results can be found in table 6.

Table 6 about here

The fifth research question was related to the possible interaction between diagnosis and license type when considering therapy outcomes. Results suggest an interaction between diagnosis and license type when considering therapy outcomes. There were statistically significant differences in dropout and recidivism percentages, total sessions (F (42, 166279) = 1.87, $p < .05$) and cost effectiveness (F (42, 166279) = 1.85, $p < .05$). For example, doctors and nurses had significantly lower dropout rates when treating disruptive behavior disorders compared to treating anxiety, adjustment, mood, and substance use/abuse disorders. Also, marriage and family therapists have a lower percentage of recidivism when treating substance abuse disorders compared to other diagnoses and other professions. The complete analysis results for diagnosis by license type can be found in table 7.

Table 7 about here

When analyzing outcomes by license type and family therapy modality, marriage therapists show a significantly significant lower percentage of recidivism compared to other license types χ^2 (5, 16835) = 51.3, $p < .001$. Nurses, counselors, marriage and family therapists, and social workers showed lower dropout rates than doctors and psychologists χ^2 (5, 16835) = 404.6, $p < .001$. Results indicate a statistically significant difference in cost effectiveness for family therapy by license type F (5, 16829) = 91.9, $p < .001$. Tukey post hoc analysis suggest that social workers (M = 310.4) are most cost effective when utilizing a family therapy modality

followed by marriage therapists (M = 322.8; *std. error* = 4.98, p = .02) together with counselors (M = 321.1; *std. error* = 5.3, p = .17), followed by nurses (M = 364.8; *std. error* = 15.6, p < .01) and psychologists (M = 394.0; *std. error* = 15.10, p = .31), and medical doctors(M = $621.5; *std. error* = 10.58, p < .01). There were statistically significant differences in total cost, F (5, 16829) = 95.2, p < .001. Tukey post hoc comparisons indicated that social workers (M = $302.3) had the lowest total cost followed by counselors (M = $313.0; *std. error* = 4.84, p = .02) together with marriage therapists (M = $314.8; *std. error* = 5.11, p = .154), followed by nurses (M = $356.7; *std. error* = 14.68, p < .01), psychologists (M = $385.8; *std. error* = 14.66, p < .01), and medical doctors had the highest mean total cost (M = $611.6; *std. error* = 10.27, p < .01). There were also statistically significant differences when analyzing cost per session F (5, 16829) = 993.6, p < .001. Post hoc analyses indicate that when conducting family therapy, counselors (M = $45.5) and social workers (M = $44.2; *std. error* = .09, p = .70) had the lowest cost per session, followed by marriage and family therapists (M = $45.8; *std. error* = .13, p < .01), nurses (M = $54.0; *std. error* =.40, p < .01), psychologists (M = $55.7; *std. error* = .39, p < .01), and medical doctors (M = $79.3; *std. error* = .27, p < .01). There was not a statistically significant difference in total number of sessions, F (5, 16829) = 1.3, p = .24. A summary of the results can be found in table 8.

Table 8 about here

The sixth research question was related to differences in outcomes when comparing age or gender for the treatment of children and adolescents. Comparisons show a statistically significant difference in the percentage of dropout by age χ^2 (15, 200210) = 535.4, p < .001. Dropout percentages tend to be higher for young children and as the age increases, the percent

dropout tends to decrease, until ages 17 and 18 when the dropout percentage rises. A summary of the dropout percentages by age can be found in table 9.

There was also a signigicant difference in recidivism percentage by age. Recidivism tends to be lower for the young children; it rises during the pre-teen and early teenage years, and then falls again for older teenage children. A summary of the recidivism percentages by age can be found in table 8. There are also significant differences in total cost (F (15, 166263) = 19.8, p < .001) and total sessions by age of child F (9, 166263) = 25.8, p < .001. Post hoc analyses revealed that the youngest and oldest children have the least total treatment costs while children ages 9 to 15 have the highest. Analysis also showed a similar trend for treatment length. Summary data for cost of treatment and treatment length can be found in table 9.

Table 9 about here

Analysis showed a statistically significant difference in the percent dropout by gender χ^2 (1, 200210) = 67.1, p < .001. Results indicate that males (17.6%) are slightly more likely to drop out of therapy than females (16.2%). Results did not indicate a significant difference in recidivism rates between males (22.5%) and females (23.1%), χ^2 (15, 200210) = 11.9, p > .05. There were also significant differences in total cost (t (166210) = -6.1, p < .001) and total sessions by gender of child t (166210) = -11.5, p < .001. Analyses revealed that treatment of.males (M = 408.4, SD = 492.8) cost less than females (M = 423.2, SD = 505.0) and that males attended fewer sessions (M = 8.1, SD = 8.6) than females (M = 8.6, SD = 9.2).

Discussion

The first research question explored the differences in outcomes by practitioner license type. The results suggest that medical doctors tend to have about twice as many dropouts when working with children and adolesents when compared to the other license types. The results also

show social workers to have the lowest dropout rates followed closely by marriage and family therapists and professional counselors. One reason that medical doctors may show a higher dropout rate could be related to their tendency to approach tretment from a medical model which views mental illness as a disturbance of the brain or central nervous system (McCulloch, Ryrie, Williamson, & St. John, 2005). The medical model tends to focus on identifying the diagnosis and then prescribing a treatment to fix the problem (Beecher, 2009). This approach to treatment is likely to result in fewer overall sessions and more cases where the client only comes in for a single consultation.

While there was a statistically significant difference in recidivism percentages by license type, with marriage and family therapists showing the lowest recidicism rates, there is only about a three percent difference in recidivism across license type. Also, the results on recidivism suggest that nearly one in four children return for additional treatment following a first episode of care. This suggests that nearly a quarter of children who are treated for mental health issues do not recieve sufficient treatment and must return for additional treatment at a later date. The recidivsm percentages in the current study are based on returning to treatment after 90 days at an outpatient treatment facility, yet they are similar to readmission rates that have been reported from inpatient treatment centers following the same amount of time (Romansky, Lyons, Lehner, & West, 2003). Romansky et al. report that 21% of adolescents return for additional treatment within 3 months of discharge. It is interesting to note that the recidivism percentages in the current study suggest that children are almost twice as likely to recidivate when compared to the general population as a whole (see Crane & Payne, 2011). Recidivism percentages by license type in the current study ranged from 20.5 to 23.8, where Crane and Payne report recidivism percentages by license type in the general population to be between 13.4 and 15.8. Results on

recidivsm may suggest that treatment of children and adolescents is inherently challenging and that many children who present to therapy may not achieve desired treatment outcomes during a single episode of care.

Unfortunately, the current study is unable to assess the reasons for which participants did or did not return for additional treatment. There are likely multiple influencing factors that bring children back to therapy. One study explored multiple predictive factors for children returning to therapy including: age, history of substane dependence, personality traits, family history of mental illness, history of abuse or neglect, history of sexual abuse, history of self harm, and accomodation at discharge (Barker, Jairam, Rocca, Goddard, & Matthey, 2010). They found that none of these factors significantly influenced the likelihood of a child to return to treatment. Given such evidence, and given the consistent readmission rates for children, which tend to be higher than those for adults, it is possible that the child is brought back to therapy because of a characteristic of the caregiver, rather than because of the child's desire to return. As noted earlier, Weisz et al. (1998) have stated that children rarely see themselves as needing therapy and are almost always referred to therapy by an adult. It is likely that there are similar trends when returning for additional treatment.

Other results in the current study suggest that children and adolesents attend about eight sessions of therapy on average. These numbers are similar across professional license type. These results are slightly higher than the average number of sessions for psychotherapy for the general population ($M = 6.95$; Crane & Payne, 2011). While children and adolescents appear to stay in treatment a little longer than adults, outpatient psychotherapy is still relatively brief.

The results on cost of treatment indicate that there are differences by professional license. The results suggest that professional counselors and marriage and family therapists have the

lowest total treatment costs and that medical doctors have the highest treatment costs when working with children and adolescents. The analysis of cost per session shows that professional counselors, social workers, and marriage and family therapists cost significanly less than nurses and psychologists, who cost less than medical doctors. Analysis of the cost variables indicated that there were differences by highest degree held. Specifically, those practitioners with a doctorate degree cost more than those with a master's degree. Even when degree is used as a control variable, there are statistically significant difference in total cost of treatment by license type. On average, professional counselors, marriage and family therapists, and social workers are more cost effective when treating children than psycholgists, nurses, and medical doctors. This suggests that treatment with these practitioners costs less when considering the total length of treatment and the likelihood of returning for additional episodes of care.

The second research question explored differences in treatment outcomes by therapy modality. There were significant differences in the percentage of dropouts by therapy modality. Nearly 50% of children who were treated using a family therapy approach dropped out of treatment, compared to 36% of children who were treated from an individual approach. Those children treated using a combination of individual sessions and family therapy sessions showed a very low percentage of dropouts. Less than seven percent of participants dropped out of treatment when the therapist utilized a mixed mode approach to therapy.

Previous research indicates that there are multiple barriers for children recieving therapy (Garcia & Weisz, 2002). These include family issues such as: transportation problems, sick family members, finances, scheduling time, and effort required to get to therapy. Perception about the need for therapy by different family members also influenced families continuing treatment. It may be that these family based barriers make continuing a pure family therapy

approach more challenging. There may be a nearly 50% dropout rate for children in family therapy treatment because of the increased complexity of getting the family to therapy for each session. Utilizing a mixed modality approach may provide additional flexibility for treatment. Sometimes the child meets with the therapist with the entire family and sometimes she meets with the therapist individually. Results in the current study suggest that offering a mixed mode option for families seeking treatment for children may help increase retention and possibly completion of treatment. Mixed mode therapy is also associated with greater overall treatment costs, however, these costs are mostly associated with the number of sessions. There may be additional benefits for clients staying in treatment longer and recieving an adequate dose of therapy (Baldwin, Berkeljon, Atkins, Olsen, Neilson, 2009).

Mixed mode therapy also had the highest average number of sessions. Children stayed in treatment twice as long when utilizing a mixed mode approach when compared to family therapy alone. They stayed in treatment 40% longer with a mixed mode approach compared to individual therapy alone. There is research which suggests that as the number of sessions increases, there is a measurable decrease in negative behaviors (Cotton-Cornelius, 2004). Utilizing a mixed mode therapy may help increase the total number of sessions that children attend, which may in turn help decrease negative behaviors.

The analysis also revealed a significant difference in total cost by therapy modality. It was not surprising that the therapy modality that had the highest average number of sessions was also the one with the highest average cost. When the number of sessions is considered in the analysis of cost, the differences between modality fall to within two dollars per session. Results thus suggest that family therapy, on average, costs less than individual or mixed mode therapy because clients tend to use fewer therapy sessions. Due to the limitations in the current data set,

it was not possible to assess why family therapy was more brief. As mentioned, it is possible that it averaged fewer sessions because of the difficulty of getting the family to therapy at the same time. It is also possible that in a family setting they were able to make quicker progress in therapy and that the family required fewer sessions to alieviate the presenting problem. Future research would benefit by comparing client satisfaction with therapy and symptom reduction when comparing across therapy modality.

Family therapy was shown to be the most cost effective of the three therapy modalities. When therapists utilize a family therapy modality when working with children, they may be maximizing impact given the resources. The results of the current study support previous findings that suggest that systemic therapy is more cost effective than individual therapy when treating children (Tucker & Oei, 2007). Results of the current study also support previous research that suggests a difference in cost effectiveness by therapy modality for participants of all ages and not just for children. Previous research has proposed that utilizing CBT may be more cost effective than family therapy when treating children (Schmidt et al., 2007). While the results of the current study cannot address any specific model of therapy, it does suggest that family based interventions are more cost effective than individual approaches when applied by all license types.

The results from the third research question suggest that dropout may be influenced by the diagnosis type. Specifically, those clients who had a relational diagnosis were nearly 30% more likely to drop out of therapy than clients who were being treated for substance abuse, which had the next highest percent dropout. Mood disorders and eating disorders showed the lowest percentage of dropouts for children. The results for recidivism by diagnosis showed an interesting trend, especially when compared to dropout percentages. Those diagnoses that tend

to have higher percentages of dropouts also tend to have lower recidivism rates. Also, the trend for total number of sessions by diagnosis matched the trend for dropouts almost exactly. Taken together, these outcomes could suggest a scale for difficulty of treatment. For example, those diagnoses that have high dropouts, low recidivism, and fewer average sessions may be considered less severe or less difficult\complex to treat. Conversely, diagnoses that are more severe may have lower percentages of dropouts due to the motivation to stay in treatment because of the severity of the symptoms. These diagnoses are also more likely to experience recidivism when the client system experiences a relapse in symptom behaviors. Further, difficult issues are likely to need more total sessions to treat successfully. Results of the current study may suggest the following order for severity\difficulty of treatment, for diagnoses for children and adolescents, ranging from more mild to more severe: relational diagnoses, substance use and abuse, adjustment disorders, other disorders, disruptive behaviors, dissociative disorders, mood disorders, anxiety disorders, schizophrenia, and eating disorders.

The current study also suggests that professionals with certain license types tend to treat certain diagnoses more often than others. The percentage of total cases seen by each license type is similar across most diagnoses. Some notable exceptions include adjustment disorders, mood disorders, relational disorders, and substance abuse. For example, of all the cases treated by medical doctors, only 4.6 % were adjustment disorders. The other license types treated adjustment disorders for 8.2 % to 12.1% of their total cases, with counselors treating the highest percentage of adjustment cases. These results may indicate that traditional mental health professionals are more likely to treat adjustment disorders than are traditional medical health professionals. The results may also indicate that medical doctors and nurses may be less likely to give an adjustment disorder diagnosis when compared to other mental health professionals. It

is possible that there is a bias within some professions against assigning certain diagnoses or perhaps less attention may be given to some diagnoses during training. Additionally, psychologists tend to treat\diagnose mood disorders less often than practitioners with other license types, while marriage and family therapists tend to treat a larger percentage of relational diagnoses. The largest discrepancy of percentage of cases seen by diagnosis was substance abuse. Social workers are more than three times more likely to treat\diagnose substance abuse than other professions. Nearly 13% of the cases seen by social workers were substance use\abuse disorders, while only 0.4% of cases seen by nurses were diagnosed with substance abuse. It is possible that such a trend may be influenced by employment setting. It may be that social workers are more likely to work in settings that recieve adolesecnt clients seeking treatment for substance abuse disorders.

There is also an interesting trend in dropout percentages for children by age. Younger children tend to have the highest percentage of dropouts from therapy. As the age of the child goes up, the dropout percentage goes down, until late adolescence (ages 17 and 18) when it again goes up. The recidivism percentages also show that younger and older children are less likely to return for additional episodes of treatment. It may be that there are more barriers to treatment for families with young children. Kazdin et al. (1993) found evidence that children with younger mothers are more likely to drop out of treatment. Also, Allgood and Crane (1991) found that if a family had more children they were less likely to drop out of treatment. Evidence from the current study suggests that the age of the child who is being treated is a predictor of dropout.

The evidence also suggests that age is a predictor of treatment length. Children ages seven to sixteen, on average, tend to stay in treatment longer than younger and older children. These results are similar to recent research that indicates that 12 to 15 year olds are 90 % more

likely to use mental health services compared to 8 to 11 year olds (Merikangas, He, Brody, Fisher, Bourdon, & Kortez, 2010). This evidence, together with the dropout percentages, may suggest that there may be fewer barriers for families to get children in a middle age range to therapy, compared to younger and older children. There may also be different expectancies from parents when presenting to therapy with children of different ages. Nock and Kazdin (2001) suggest that parental expectancies have an influence on therapy attendance. It may be that parents of very young children do not expect therapy to have much of an influence. It may also be that parents of older adolescents do not expect their child to change or put sufficient effort into therapy. Future research could be designed to explore what may be influencing the differences in dropouts and total number of sessions by age.

Finally, the analysis on outcomes by gender suggest that males are slightly more likely to dropout of therapy than are females, though recidivsim percentages are not significantly different. It also suggests that females have a slightly higher mean number of sessions. It appears that male children utilize fewer total sessions than female children.

Clinical Implications

Results of the current study can potenailly benefit clinicians who are treating children and adolescents. The current study suggests that children may be more likely than adults to return for additional treatment. As children do not typically present to therapy on their own, it is likely the parents or caregivers who are having the children return to therapy. When working with children, it may be useful to inform parents and caregivers that about one in four children return for additional treatment later. This may help normalize the parents experience and reduce potential distress that the caregiver may experience as a result of returning to treatment.

The current study also found that children have much lower dropout and stay in treatment longer when the therapist utilizes a mixed modality of therapy. Clinicians who are working with children may consider adopting a mixed mode approach and hold both individual and family sessions as part of treatment. Systems based approaches to therapy tend to emphasize the inclusion of family systems in therapy. While the results of the current study suggest that family therapy has an advantage in terms of cost effectiveness, they also suggest that conducting both individual and conjoint sessions can help clients remain in treatment. A mixed mode approach provides for opportunities for the clinician to work with the child's family system, as well as, with the child individually. For example, there may be issues about which the child or adolescent does not feel comfortable discussing in front of other family members and a mixed mode approach provides opportunities to have private sessions while still involving the larger family system in treatment. Utilizing a mixed modality approach may also help families overcome some of scheduling barriers to family based treatments. There would be less pressure on the family to present to therapy each session; some sessions would only involve the child.

Clinicians may also benefit from the findings on dropout and recidivism by diagnosis. When a clinician is preparing to work with a child or adolescent who has been identified as having a diagnosis with a higher dropout percentage, the clinician may want to take additional steps to help the child complete treatment. This would likely involve developing a strong therapeutic relationship with the child and the child's parents or caregiver. It may also be aided by helping the parents or caregivers have realistic expectations for the course of therapy. Clinicians can also help parents have realistic expectations related to the duration of therapy, especially when working with diagnoses that tend to utilize more sessions.

There may also be a benefit to exploring what specific factors are influencing the differences in outcomes by license type. It may be that certain training approaches have potential advantages for the treatment of children and adolescents. Identifying what these advantages are may lead to information that could potentially help professions better prepare clinicians to work with children and adolescents, both during initial training and through continuing education.

Limitations and Future Directions

The current study was a retrospective analysis of administrative data. It did not utilize an experimental design. As such, the results should be interpreted with some degree of caution. As there is a low level of internal validity, the evidence presented in the current study should not be considered causal. Participants recieved treatment from various providers utilizing different therapy modalities, but were not randomly assigned to groups. Participants were likely selectively referred to providers. Another consideration in the interpretation of the results is that the distribution between provider types was not uniform. There was not an equal distribution of participants in each comparison group. Future research exploring therapy outcomes by profession and therapy type would benefit from an experimental study with random assignment to group.

Another limitation in the interpretation of the current study is the lack of demographic information available from participants. Due to the nature of the agreement with Cigna, information on race, SES, and ethnicity was not available. It was also not possible to assess for external support systems, level of family distress, and available client resources. It was not possible to collect assessment information on participants in the current study. We also did not

have data on therapist or client perceived experience of therapy. Future research would greatley benefit from inclusion of assessment measures for client outcomes.

Despite its limitations, the current study provides some important evidence about the treatment of children and adolescents. The data represents clients who are being treated in the real world, independent of the controls of laboratory research. Thus, there is a high level of external validity. The current study explored differences in child and adolescent therapy outcomes by license type, therapy modality, diagnosis, age, and gender. Results indicate that there are differences in dropout, recidivism, cost, and treatment lengths across these variables. These results provide valuable information about mental health treatment of children and adolescents. Specifically, utilizing a family based approach may help reduce the total length of treatment while utilizing a mixed mode approach to therapy may help reduce the risk of dropout from therapy. Also, some diagnoses appear to be more difficult to treat, with higher percentages of dropout and requiring more time and money.

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Table 1

Results of statistical analyses for dropout and recidivism by license type and therapy modality

License	**N**	**Dropout**	**N**	**Recidivism**
MD	3672	34.2%	2415	23.4%
Nurse	1405	17.3%	1162	23.3%
Psychologist	74614	18.0%	61200	22.8%
Social worker	64266	15.2%	54510	23.8%
MFT	15404	16.0%	12932	20.5%
Counselor	40849	16.6%	34060	22.0%
Modality				
Individual	119797	36.3%	76253	17.7%
Family	32186	47.4%	16835	12.0%
Mixed	48227	6.6%	45059	42.5%

Table 2

Results of statistical analyses for outcomes by license type and therapy modality

	Sessions		**Total Cost**		**Cost / Session**		**Cost Effectiveness**		**LN Sessions**		**LN Total Cost**		**LN Cost Effectiveness**	
License	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
MD	8.3	10.7	$571.5	781.7	$72.7	25.2	599.4	797.9	1.69	0.83	5.9	0.90	5.9	0.90
Nurse	8.4	8.3	$454.0	516.2	$52.6	11.1	459.0	532.0	1.76	0.86	5.7	0.87	5.7	0.85
Psychologist	8.3	8.2	$446.6	542.4	$54.8	13.0	473.3	557.5	1.76	0.85	5.7	0.89	5.8	0.85
Social worker	8.6	9.1	$405.5	465.9	$44.8	12.6	406.9	481.3	1.80	0.84	5.6	0.86	5.6	0.87
MFT	8.2	8.8	$384.1	451.8	$45.3	12.1	390.8	466.4	1.75	0.82	5.5	0.85	5.6	0.86
Counselor	8.1	8.4	$374.7	445.2	$44.6	13.0	378.4	459.1	1.74	0.89	5.5	0.88	5.5	0.86
Modality														
Individual	7.3	8.0	$361.7	366.2	$48.6	14.3	371.7	391.2	1.65	0.88	5.5	0.87	5.5	0.88
Family	5.6	5.9	$281.3	252.9	$49.8	14.4	288.0	260.2	1.46	0.83	5.3	0.82	5.4	0.82
Mixed	11.7	11.2	$584.6	533.4	$49.2	13.5	603.2	623.1	2.13	0.90	5.9	0.89	6.0	0.90

Notes: LN is the natural log transformation of the data.

Table 3

Tukey post-hoc analyses for comparisons in Table 2.

Variable	**License (I)**	**License (J)**	**Mean Diff. (I - J)**	**Std. Error**	**Sig.**
Total Sessions	Counselor	MD	-.27	.18	.70
		Nurse	-.33	.26	.82
		Social Worker	-.59*	.06	.00
		MFT	-.17	.09	.41
		Psychologist	-.25*	.06	.00
	MD	Counselor	.27	.18	.70
		Nurse	-.06	.31	1.00
		Social Worker	-.32	.19	.50
		MFT	.10	.19	.99
		Psychologist	.02	.18	1.00
	Nurse	MD	.33	.27	.82
		Nurse	.06	.32	1.00
		Social Worker	-.27	.26	.91

	MFT	.15	.27	.99
	Psychologist	.07	.26	1.00
Social Worker	Counselor	.59*	.06	.00
	MD	.32	.18	.50
	Nurse	.27	.26	.91
	MFT	.42*	.08	.00
	Psychologist	.34*	.05	.00
MFT	Counselor	.17	.09	.41
	MD	-.09	.19	.99
	Nurse	-.15	.27	.99
	Social Worker	-.41*	.08	.00
	Psychologist	-.08	.08	.93
Psychologist	Counselor	.25*	.06	.00
	MD	-.01	.18	1.00
	Nurse	-.07	.26	1.00
	Social Worker	-.34*	.05	.00

		MFT	.082	.09	.93
Total Cost	Counselor	MD	-220.15*	10.45	.00
		Nurse	-79.82*	14.81	.00
		Social Worker	-27.39*	3.43	.00
		MFT	-12.29	5.12	.16
		Psychologist	-94.38*	3.35	.00
	MD	Counselor	220.15*	10.45	.00
		Nurse	140.33*	17.73	.00
		Social Worker	192.75*	10.32	.00
		MFT	207.85*	11.00	.00
		Psychologist	125.76*	10.30	.00
	Nurse	MD	79.82*	14.81	.00
		Nurse	-140.33*	17.73	.00
		Social Worker	52.42*	14.72	.01
		MFT	67.52*	15.20	.00
		Psychologist	-14.55	14.70	.92

	Social Worker	Counselor	27.39*	3.43	.00
		MD	-192.75*	10.32	.00
		Nurse	-52.42*	14.72	.01
		MFT	15.10*	4.85	.02
		Psychologist	-66.98*	2.92	.00
	MFT	Counselor	12.26	5.12	.15
		MD	-207.85*	11.00	.00
		Nurse	-67.52*	15.20	.00
		Social Worker	-15.10*	4.85	.02
		Psychologist	-82.08*	4.80	.00
	Psychologist	Counselor	94.38*	3.35	.00
		MD	-125.76*	10.30	.00
		Nurse	14.56	14.70	.92
		Social Worker	66.98*	2.92	.00
		MFT	82.08*	4.80	.00
Cost/Session	Counselor	MD	-28.03*	.27	.00

	Nurse	-7.97*	.38	.00
	Social Worker	-.12	.09	.70
	MFT	-.67*	.13	.00
	Psychologist	-10.16*	.08	.00
MD	Counselor	28.03	.27	.00
	Nurse	20.06*	.46	.00
	Social Worker	27.90*	.27	.00
	MFT	27.36*	.28	.00
	Psychologist	17.87*	.27	.00
Nurse	MD	7.97*	.38	.00
	Nurse	-20.06*	.46	.00
	Social Worker	7.84*	.38	.00
	MFT	7.29*	.39	.00
	Psychologist	-2.19*	.38	.00
Social Worker	Counselor	.12	.09	.70
	MD	-27.90*	.27	.00

		Nurse	-7.84*	.38	.00
		MFT	-.54*	.12	.00
		Psychologist	-10.03*	.07	.00
	MFT	Counselor	.67*	.13	.00
		MD	-27.36*	.28	.00
		Nurse	-7.29*	.39	.00
		Social Worker	.54*	.12	.00
		Psychologist	-9.49*	.12	.00
	Psychologist	Counselor	10.16*	.08	.00
		MD	-17.87*	.27	.00
		Nurse	2.19*	.38	.00
		Social Worker	10.03*	.07	.00
		MFT	9.49*	.12	.00
Cost Effective	Counselor	MD	-221.03*	10.77	.00
		Nurse	-80.58*	15.25	.00
		Social Worker	-28.49*	3.53	.00

	MFT	-12.41	5.28	.17
	Psychologist	-94.95*	3.45	.00
MD	Counselor	221.03*	10.77	.00
	Nurse	140.44*	18.26	.00
	Social Worker	192.53*	10.63	.00
	MFT	208.62*	11.33	.00
	Psychologist	126.07*	10.61	.00
Nurse	MD	80.58*	15.25	.00
	Nurse	-140.44*	18.26	.00
	Social Worker	52.08*	15.16	.01
	MFT	68.17*	15.66	.00
	Psychologist	-14.37	15.14	.93
Social Worker	Counselor	28.49*	3.53	.00
	MD	-192.53*	10.63	.00
	Nurse	-52.08*	15.16	.01
	MFT	16.08*	5.00	.02

	Psychologist	-66.46*	3.01	.00
MFT	Counselor	12.41	5.28	.17
	MD	-208.62*	11.33	.00
	Nurse	-68.17*	15.66	.00
	Social Worker	-16.08*	5.00	.02
	Psychologist	-82.54*	4.95	.00
Psychologist	Counselor	94.95*	3.45	.00
	MD	-126.07*	10.61	.00
	Nurse	14.37	15.14	.93
	Social Worker	66.46*	3.01	.00
	MFT	82.54*	4.95	.00

Note: * indicates a statistically significant difference at $p < .05$.

Table 4

Results of statistical analyses for outcomes by diagnosis

					Sessions		Total Cost		Cost / session		Cost effectiveness	
Diagnosis	**N**	**Dropout**	**N**	**Recidivism**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Adjustment	22725	18.1%	18602	20.4%	7.6	8.1	$373.6	444.5	$48.2	13.9	384.4	458.1
Anxiety /PTSD	21260	14.7%	18128	24.2%	9.1	9.5	$457.3	537.1	$49.4	14.6	470.5	553.0
Disruptive behavior	13586	16.2%	11383	21.7%	8.1	8.1	$404.7	447.6	$49.1	13.8	416.2	460.7
Dissociative	121	14.9%	103	26.4%	8.2	8.0	$406.0	382.2	$50.5	17.1	418.0	395.3
Eating disorders	968	9.2%	879	29.0%	12.2	12.2	$620.6	708.6	$49.9	15.5	639.0	729.9
Mood disorders	41832	13.8%	36071	24.6%	9.3	10.0	$465.1	563.2	$48.9	13.8	478.8	580.2
Relational	772	25.8%	573	9.7%	4.9	4.2	$229.5	242.1	$46.4	17.1	235.0	246.7
Schizophrenic/ psychotic	25	16.0%	21	44.0%	12.7	6.4	$650.1	732.2	$48.3	12.0	672.1	755.8
Substance use and abuse	2166	20.4%	1724	15.7%	6.8	6.4	$335.4	348.8	$49.7	17.4	344.2	357.9
Other diagnoses	96755	18.6%	78795	22.6%	7.9	8.4	$395.1	474.5	$49.0	14.3	406.6	488.5

Table 5

Tukey post hoc analyses for comparisons by diagnosis.

Variable	Diagnosis (I)	Diagnosis (J)	Mean Diff. (I - J)	Std. Error	Sig.
EoC1_Total_Dollars	Adjustment	Anxiety	-83.68*	5.18	.000
		Disruptive	-31.13*	5.91	.000
		Dissociative	-32.40	49.11	1.000
		Eating	-247.00*	17.15	.000
		Mood	-91.57*	4.48	.000
		Relational	144.09*	21.08	.000
		Schizophrenia	-276.52	108.52	.243
		Substance	38.11	12.51	.070
		Other	-21.55*	4.05	.000
	Anxiety	Adjustment	83.68*	5.18	.000
		Disruptive	52.54*	5.94	.000
		Dissociative	51.25	49.11	.990
		Eating	-163.32*	17.16	.000

	Mood	-7.85	4.52	.770
	Relational	227.77*	21.08	.000
	Schizophrenia	-192.87	108.52	.750
	Substance	121.85*	12.52	.000
	Other	62.12*	4.09	.000
Disruptive	Adjustment	31.13*	5.91	.000
	Anxiety	-52.54*	5.94	.000
	Dissociative	-1.36	49.19	1.000
	Eating	-215.87*	17.39	.000
	Mood	-60.43*	5.34	.000
	Relational	175.23*	21.28	.000
	Schizophrenia	-245.4	108.56	.415
	Substance	69.31*	12.84	.000
	Other	9.59	4.98	.654
Dissociative	Adjustment	32.40	49.11	1.000
	Anxiety	-51.25	49.11	.990

	Disruptive	1.36	49.19	1.000
	Eating	-214.54*	51.76	.001
	Mood	-59.10	49.04	.972
	Relational	176.55*	53.19	.031
	Schizophrenia	-244.12	119.00	.562
	Substance	70.63	50.41	.927
	Other	10.90	49.00	1.000
Eating	Adjustment	247.01*	17.15	.000
	Anxiety	163.329*	17.16	.000
	Disruptive	215.87*	17.39	.000
	Dissociative	214.54*	51.70	.001
	Mood	155.43*	16.96	.000
	Relational	391.10*	26.68	.000
	Schizophrenia	-29.51	109.75	1.000
	Substance	285.18*	20.59	.000
	Other	225.45*	16.85	.000

Mood	Adjustment	91.57*	4.48	.000
	Anxiety	7.85	4.52	.770
	Disruptive	60.43*	5.34	.000
	Dissociative	59.10	49.04	.972
	Eating	-155.43*	16.96	.000
	Relational	235.66*	20.92	.000
	Schizophrenia	-184.92	108.49	.793
	Substance	129.74*	12.25	.000
	Other	70.01*	3.15	.000
Relational	Adjustment	-144.09*	21.08	.000
	Anxiety	-227.77*	21.08	.000
	Disruptive	-175.23*	21.28	.000
	Dissociative	-176.55*	53.19	.031
	Eating	-391.10*	26.68	.000
	Mood	-235.66*	20.92	.000
	Schizophrenia	-420.66*	110.43	.005

	Substance	-105.92*	23.96	.000
	Other	-165.65*	20.83	.000
Schizophrenia	Adjustment	276.52	108.55	.243
	Anxiety	192.87	108.55	.750
	Disruptive	245.42	108.56	.415
	Dissociative	244.10	119.00	.562
	Eating	29.55	109.75	1.000
	Mood	184.99	108.49	.793
	Relational	420.66*	110.43	.005
	Substance	314.74	109.12	.110
	Other	255.00	108.47	.356
Substance	Adjustment	-38.17	12.51	.070
	Anxiety	-121.85*	12.52	.000
	Disruptive	-69.31*	12.84	.000
	Dissociative	-70.63	50.41	.927
	Eating	-285.18*	20.59	.000

		Mood	-129.74*	12.25	.000
		Relational	105.92*	23.96	.000
		Schizophrenia	-314.72	109.12	.110
		Other	-59.73*	12.10	.000
	Other	Adjustment	21.55*	4.05	.000
		Anxiety	-62.12*	4.09	.000
		Disruptive	-9.59	4.98	.654
		Dissociative	-10.94	49.00	1.000
		Eating	-225.45*	16.85	.000
		Mood	-70.01*	3.15	.000
		Relational	165.65*	20.83	.000
		Schizophrenia	-255.06	108.47	.356
		Substance	59.73*	12.10	.000
Total Sessions	Adjustment	Anxiety	-1.42*	.09	.000
		Disruptive	-.50*	.10	.000
		Dissociative	-.58	.87	1.000

	Eating	-4.58*	.30	.000
	Mood	-1.70*	.08	.000
	Relational	2.76*	.37	.000
	Schizophrenia	-5.03	1.97	.215
	Substance	.88*	.22	.003
	Other	-.30*	.07	.001
Anxiety	Adjustment	1.46*	.09	.000
	Disruptive	.95*	.10	.000
	Dissociative	.87	.87	.992
	Eating	-3.12*	.30	.000
	Mood	-.24	.08	.067
	Relational	4.22*	.37	.000
	Schizophrenia	-3.57	1.98	.704
	Substance	2.34*	.22	.000
	Other	1.15*	.07	.000
Disruptive	Adjustment	.50*	.10	.000

	Anxiety	-.95*	.10	.000
	Dissociative	-.08	.87	1.000
	Eating	-4.08*	.31	.000
	Mood	-1.20*	.09	.000
	Relational	3.26*	.37	.000
	Schizophrenia	-4.52	1.93	.361
	Substance	1.39*	.22	.000
	Other	.19	.08	.437
Dissociative	Adjustment	.58	.87	1.000
	Anxiety	-.87	.87	.992
	Disruptive	.08	.87	1.000
	Eating	-4.00*	.92	.001
	Mood	-1.12	.87	.958
	Relational	3.35*	.94	.015
	Schizophrenia	-4.44	2.13	.529
	Substance	1.47	.89	.826

	Other	.28	.87	1.000
Eating	Adjustment	4.58*	.30	.000
	Anxiety	3.12*	.30	.000
	Disruptive	4.08*	.31	.000
	Dissociative	4.00*	.92	.001
	Mood	2.88*	.30	.000
	Relational	7.35*	.47	.000
	Schizophrenia	-.44	1.95	1.000
	Substance	5.47*	.36	.000
	Other	4.28*	.30	.000
Mood	Adjustment	1.70*	.08	.000
	Anxiety	.27	.08	.067
	Disruptive	1.20*	.09	.000
	Dissociative	1.12	.87	.958
	Eating	-2.88*	.30	.000
	Relational	4.47*	.37	.000

	Schizophrenia	-3.32	1.95	.783
	Substance	2.59*	.21	.000
	Other	1.40*	.05	.000
Relational	Adjustment	-2.76*	.37	.000
	Anxiety	-4.22*	.37	.000
	Disruptive	-3.26*	.37	.000
	Dissociative	-3.35*	.94	.015
	Eating	-7.35*	.47	.000
	Mood	-4.47*	.37	.000
	Schizophrenia	-7.79*	1.96	.003
	Substance	-1.87*	.42	.000
	Other	-3.07*	.37	.000
Schizophrenia	Adjustment	5.03	1.93	.215
	Anxiety	3.57	1.93	.704
	Disruptive	4.52	1.93	.361
	Dissociative	4.44	2.11	.529

	Eating	.44	1.95	1.000
	Mood	3.32	1.93	.783
	Relational	7.79*	1.96	.003
	Substance	5.92	1.94	.070
	Other	4.72	1.93	.298
Substance	Adjustment	-.88*	.22	.003
	Anxiety	-2.34*	.22	.000
	Disruptive	-1.39*	.22	.000
	Dissociative	-1.47	.89	.826
	Eating	-5.47*	.36	.000
	Mood	-2.59*	.21	.000
	Relational	1.87*	.42	.000
	Schizophrenia	-5.92	1.94	.070
	Other	-1.19*	.21	.000
Other	Adjustment	.30*	.07	.001
	Anxiety	-1.15*	.07	.000

		Disruptive	-.19	.08	.437
		Dissociative	-.28	.87	1.000
		Eating	-4.28*	.30	.000
		Mood	-1.40*	.05	.000
		Relational	3.07*	.37	.000
		Schizophrenia	-4.72	1.93	.298
		Substance	1.19*	.21	.000
EoC1_CostEffectiveness	Adjustment	Anxiety	-86.09*	5.34	.000
		Disruptive	-31.80*	6.09	.000
		Dissociative	-33.67	50.57	1.000
		Eating	-254.63*	17.66	.000
		Mood	-94.37*	4.62	.000
		Relational	149.36*	21.70	.000
		Schizophrenia	-287.79	111.75	.229
		Substance	40.21	12.88	.057
		Other	-22.20*	4.17	.000

Anxiety	Adjustment	86.09*	5.34	.000
	Disruptive	54.29*	6.12	.000
	Dissociative	52.43	50.57	.990
	Eating	-168.54*	17.67	.000
	Mood	-8.28	4.65	.750
	Relational	235.45*	21.71	.000
	Schizophrenia	-201.67	111.75	.733
	Substance	126.30*	12.89	.000
	Other	63.88*	4.21	.000
Disruptive	Adjustment	31.80*	6.09	.000
	Anxiety	-54.29*	6.12	.000
	Dissociative	-1.85	50.65	1.000
	Eating	-222.83*	17.91	.000
	Mood	-62.57*	5.50	.000
	Relational	181.16*	21.91	.000
	Schizophrenia	-255.92	111.79	.396

	Substance	72.01*	13.22	.000
	Other	9.59	5.13	.690
Dissociative	Adjustment	33.65	50.57	1.000
	Anxiety	-52.43	50.57	.990
	Disruptive	1.85	50.61	1.000
	Eating	-220.97*	53.38	.001
	Mood	-60.71	50.50	.972
	Relational	183.02*	54.77	.029
	Schizophrenia	-254.10	122.54	.546
	Substance	73.87	51.91	.920
	Other	11.45	50.46	1.000
Eating	Adjustment	254.63*	17.66	.000
	Anxiety	168.54*	17.67	.000
	Disruptive	222.83*	17.91	.000
	Dissociative	220.97*	53.30	.001
	Mood	160.25*	17.47	.000

	Relational	403.99*	27.48	.000
	Schizophrenia	-33.13	113.01	1.000
	Substance	294.84*	21.21	.000
	Other	232.42*	17.35	.000
Mood	Adjustment	94.37*	4.62	.000
	Anxiety	8.28	4.65	.750
	Disruptive	62.57*	5.50	.000
	Dissociative	60.71	50.50	.972
	Eating	-160.25*	17.47	.000
	Relational	243.74*	21.55	.000
	Schizophrenia	-193.38	111.72	.778
	Substance	134.58*	12.61	.000
	Other	72.17*	3.25	.000
Relational	Adjustment	-149.36*	21.70	.000
	Anxiety	-235.45*	21.71	.000
	Disruptive	-181.16*	21.91	.000

	Dissociative	-183.02*	54.77	.029
	Eating	-403.99*	27.48	.000
	Mood	-243.74*	21.55	.000
	Schizophrenia	-437.12*	113.71	.005
	Substance	-109.15*	24.68	.000
	Other	-171.52*	21.45	.000
Schizophrenia	Adjustment	287.76	111.75	.229
	Anxiety	201.67	111.75	.733
	Disruptive	255.96	111.79	.396
	Dissociative	254.10	122.54	.546
	Eating	33.13	113.01	1.000
	Mood	193.38	111.72	.778
	Relational	437.12*	113.71	.005
	Substance	327.97	112.36	.100
	Other	265.55	111.70	.339
Substance	Adjustment	-40.21	12.88	.057

	Anxiety	-126.30*	12.89	.000
	Disruptive	-72.01*	13.22	.000
	Dissociative	-73.87	51.91	.920
	Eating	-294.84*	21.21	.000
	Mood	-134.58*	12.56	.000
	Relational	109.15*	24.68	.000
	Schizophrenia	-327.97	112.36	.100
	Other	-62.41*	12.46	.000
Other	Adjustment	22.20*	4.17	.000
	Anxiety	-63.88*	4.21	.000
	Disruptive	-9.59	5.13	.690
	Dissociative	-11.45	50.46	1.000
	Eating	-232.42*	17.35	.000
	Mood	-72.17*	3.25	.000
	Relational	171.57*	21.45	.000
	Schizophrenia	-265.55	111.70	.339

		Substance	62.41*	12.46	.000
EoC1_CostPerSession	Adjustment	Anxiety	-1.20*	.14	.000
		Disruptive	-.94*	.16	.000
		Dissociative	-2.32	1.40	.818
		Eating	-1.69*	.48	.019
		Mood	-.73*	.12	.000
		Relational	1.79	.60	.084
		Schizophrenia	-.11	3.09	1.000
		Substance	-1.54*	.35	.001
		Other	-.81*	.11	.000
	Anxiety	Adjustment	1.20*	.14	.000
		Disruptive	.26	.16	.872
		Dissociative	-1.11	1.40	.999
		Eating	-.48	.48	.993
		Mood	.47*	.12	.009
		Relational	3.00*	.60	.000

	Schizophrenia	1.09	3.09	1.000
	Substance	-.33	.35	.995
	Other	.39*	.11	.029
Disruptive	Adjustment	.94*	.16	.000
	Anxiety	-.26	.16	.872
	Dissociative	-1.38	1.40	.993
	Eating	-.75	.49	.888
	Mood	.21	.15	.930
	Relational	2.74*	.60	.000
	Schizophrenia	.83	3.09	1.000
	Substance	-.596	.36	.831
	Other	.122	.14	.997
Dissociative	Adjustment	2.32	1.40	.818
	Anxiety	1.11	1.40	.999
	Disruptive	1.38	1.40	.993
	Eating	.63	1.47	1.000

	Mood	1.59	1.39	.981
	Relational	4.12	1.51	.167
	Schizophrenia	2.21	3.39	1.000
	Substance	.78	1.43	1.000
	Other	1.50	1.34	.987
Eating	Adjustment	1.69*	.44	.019
	Anxiety	.48	.48	.993
	Disruptive	.75	.49	.888
	Dissociative	-.63	1.47	1.000
	Mood	.96	.48	.608
	Relational	3.49*	.76	.000
	Schizophrenia	1.50	3.13	1.000
	Substance	.15	.58	1.000
	Other	.87	.48	.719
Mood	Adjustment	.73*	.12	.000
	Anxiety	-.47*	.12	.009

	Disruptive	-.21	.15	.930
	Dissociative	-1.59	1.35	.981
	Eating	-.96	.48	.608
	Relational	2.52*	.59	.001
	Schizophrenia	.62	3.09	1.000
	Substance	-.81	.34	.376
	Other	-.08	.09	.995
Relational	Adjustment	-1.79	.60	.084
	Anxiety	-3.00*	.60	.000
	Disruptive	-2.74*	.60	.000
	Dissociative	-4.12	1.51	.167
	Eating	-3.49*	.76	.000
	Mood	-2.52*	.59	.001
	Schizophrenia	-1.90	3.15	1.000
	Substance	-3.33*	.68	.000
	Other	-2.61*	.59	.000

Schizophrenia	Adjustment	.11	3.09	1.000
	Anxiety	-1.09	3.09	1.000
	Disruptive	-.83	3.08	1.000
	Dissociative	-2.21	3.39	1.000
	Eating	-1.58	3.13	1.000
	Mood	-.62	3.09	1.000
	Relational	1.90	3.15	1.000
	Substance	-1.43	3.11	1.000
	Other	-.70	3.09	1.000
Substance	Adjustment	1.54*	.35	.001
	Anxiety	.33	.35	.995
	Disruptive	.59	.36	.831
	Dissociative	-.78	1.43	1.000
	Eating	-.15	.58	1.000
	Mood	.81	.34	.376
	Relational	3.33*	.68	.000

	Schizophrenia	1.43	3.11	1.000
	Other	.72	.34	.524
Other	Adjustment	.81*	.13	.000
	Anxiety	-.39*	.11	.029
	Disruptive	-.12	.14	.997
	Dissociative	-1.50	1.39	.987
	Eating	-.87	.48	.719
	Mood	.08	.09	.995
	Relational	2.617*	.59	.000
	Schizophrenia	.70	3.09	1.000
	Substance	-.72	.34	.524

Table 6

A summary of the percentage of cases treated by each license type.

Diagnosis Group	**MD**	**Nurse**	**Psychologist**	**Social Worker**	**MFT**	**Counselors**
Adjustment	4.6%	8.2%	11.7%	11.1%	10.7%	12.1%
Anxiety/PTSD	11.5%	12.0%	11.2%	10.3%	10.6%	10.0%
Disruptive	4.7%	5.7%	7.1%	6.6%	7.3%	6.5%
Dissociative	0.1%	0.1%	0.1%	0.001%	0.1%	.004%
Eating Disorder	0.5%	1.2%	0.4%	0.6%	0.5%	0.5%
Mood Disorder	23.7%	25.3%	18.0%	23.6%	22.7%	20.8%
Relational	0.0%	0.0%	0.2%	0.5%	0.7%	0.5%
Schizophrenia	0.0%	0.0%	0.001%	0.0%	0.001%	0.001%
Substance Abuse	3.6%	0.4%	0.5%	13.%	1.0%	1.6%
Other	51.2%	47.1%	50.8%	46.0%	46.4%	48.0%

Table 7

Analysis results by diagnosis and license type

						Sessions		Total Cost		Cost effectiveness	
Diagnosis	**License**	**N**	**Dropout**	**N**	**Recidivism**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Adjustment	MD	170	28.8%	121	18.8%	8.7	8.2	604.0	707.1	616.1	719.7
	Nurse	115	15.7%	97	23.5%	8.2	8.2	420.1	451.7	432.4	467.8
	Psychologist	8745	19.1%	7072	21.4%	7.7	7.4	423.1	506.1	434.2	520.5
	Social worker	7101	17.2%	5887	20.7%	7.8	7.9	348.8	427.9	360.0	442.6
	MFT	1642	18.3%	1342	17.2%	7.2	7.5	319.0	360.1	328.6	372.3
	Counselor	4946	17.4%	4083	19.3%	7.5	7.1	333.4	348.5	343.6	359.6
Anxiety	MD	423	29.8%	297	25.8%	8.7	9.5	633.2	790.0	646.1	805.9
	Nurse	168	16.1%	141	23.2%	9.2	8.9	503.8	564.2	517.3	579.8
	Psychologist	8351	15.1%	7089	24.1%	9.0	9.2	508.0	595.0	521.1	611.0
	Social worker	6607	13.1%	5744	25.3%	9.6	9.1	434.6	494.7	448.6	511.7
	MFT	1637	16.6%	1365	21.3%	8.6	8.1	405.4	503.5	417.5	518.9
	Counselor	4074	14.3%	3492	23.9%	8.7	8.9	394.9	445.3	407.4	459.9
Disruptive Behavior	MD	171	21.6%	134	20.5%	7.3	7.6	348.3	378.3	493.8	426.5

	Nurse	80	10.0%	72	23.8%	7.8	8.0	377.0	432.4	388.0	448.8
	Psychologist	5291	16.7%	4408	23.0%	8.4	8.6	464.8	509.5	476.7	523.4
	Social worker	4272	15.7%	3601	22.1%	8.3	8.6	378.5	420.0	390.3	433.3
	MFT	1128	13.9%	971	18.6%	7.7	7.8	347.9	353.9	358.4	365.7
	Counselor	2644	16.9%	2197	19.5%	7.7	7.9	348.3	378.3	358.9	390.4
Dissociative	MD	4	0.0%	4	0.0%	3.8	3.2	298.1	226.1	301.9	229.0
	Nurse	1	0.0%	1	100%	3	--	189.0	--	195.0	--
	Psychologist	59	20.3%	47	27.1%	8.8	8.4	490.6	407.8	503.4	419.6
	Social worker	31	9.7%	28	29.0%	7.0	6.7	288.3	271.4	298.9	282.1
	MFT	8	25.0%	6	25.0%	4.9	4.3	191.8	132.9	198.7	138.4
	Counselor	18	5.6%	17	22.2%	9.9	10.1	479.8	489.4	496.1	512.3
Eating Disorders	MD	18	5.6%	17	11.1%	9.0	8.7	611.3	526.5	622.0	533.9
	Nurse	17	5.9%	16	47.1%	14.7	13.9	834.7	751.3	859.0	773.2
	Psychologist	284	9.8%	315	27.3%	12.4	12.6	709.7	798.7	728.3	821.2
	Social worker	355	8.7%	324	29.6%	12.2	12.4	576.1	635.4	594.7	656.4
	MFT	75	12.0%	66	32.0%	12.2	11.8	556.4	529.8	575.3	548.5

	Counselor	188	8.5%	172	29.8%	12.0	12.8	562.9	742.6	580.9	764.9
Mood Disorders	MD	872	31.8%	595	22.8%	9.1	11.2	655.7	813.5	669.0	830.4
	Nurse	356	16.3%	298	26.1%	9.2	8.8	500.4	566.0	514.2	583.0
	Psychologist	13447	12.8%	11720	25.0%	9.5	9.1	528.7	620.5	542.7	638.6
	Social worker	15165	13.1%	13180	25.5%	9.5	9.7	436.4	500.0	450.3	516.5
	MFT	3493	13.1%	3035	22.6%	9.2	9.1	431.1	531.2	444.3	548.7
	Counselor	8499	14.8%	7243	23.3%	8.9	9.4	411.8	549.4	424.5	565.8
Relational	MD	1	0.0%	1	100.0%	5.0	--	483.8	--	493.0	--
	Nurse	--	--	--	--	--	--	--	--	--	--
	Psychologist	142	33.1%	95	7.7%	5.0	6.1	277.0	276.7	282.8	272.9
	Social worker	323	21.1%	255	9.6%	5.1	5.0	229.5	261.9	235.0	265.9
	MFT	115	27.0%	84	15.7%	4.5	4.2	208.5	198.9	214.0	205.4
	Counselor	191	27.7%	138	7.3%	4.9	5.6	207.6	204.0	213.0	208.4
Schizophrenia	MD	--	--	--	--	--	--	--	--	--	--
	Nurse	--	--	--	--	--	--	--	--	--	--
	Psychologist	6	33.3%	4	50.0%	9.8	10.2	606.3	404.8	623.0	415.5
	Social	5	0.0%	4	40.0%	12.2	12.3	494.6	453.3	515.4	478.9

	worker										
	MFT	5	20.0%	4	20.0%	5.8	6.2	231.5	259.4	241.3	274.0
	Counselor	9	11.1%	8	55.6%	17.9	16.2	978.6	1036	1010.1	1067.3
Substance use/ abuse	MD	134	26.1%	99	15.7%	6.5	7.1	458.4	386.9	467.1	394.5
	Nurse	6	16.7%	5	50.0%	4.8	3.2	233.6	80.3	421.4	82.4
	Psychologist	380	18.4%	310	16.1%	7.1	7.5	398.4	438.8	407.4	448.3
	Social worker	827	20.3%	659	15.7%	6.7	7.0	318.2	321.5	326.9	330.4
	MFT	150	18.0%	123	10.0%	7.2	6.8	320.6	309.4	329.6	320.8
	Counselor	669	21.1%	528	15.7%	6.6	6.9	301.2	314.2	309.8	323.9
Other	MD	1879	39.0%	1147	24.2%	8.0	9.2	561.8	829.0	574.0	846.3
	Nurse	662	19.6%	532	20.7%	7.7	7.9	406.7	481.4	417.5	496.0
	Psychologist	37878	20.3%	30171	22.1%	7.8	8.1	431.5	503.4	442.7	517.1
	Social worker	29574	16.1%	24827	23.9%	8.3	8.9	377.2	454.4	389.2	469.2
	MFT	7151	17.0%	5936	20.5%	8.0	8.3	367.4	428.2	378.6	441.9
	Counselor	19611	17.5%	16182	22.4%	7.8	8.2	352.2	420.2	363.9	433.7

Table 8

Results of statistical analyses for outcomes of family therapy by license type

					Sessions		Total Cost		Cost / session		Cost effectiveness	
License	**N**	**Dropout**	**N**	**Recidivism**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
MD	1192	51.9%	573	28.6%	7.6	7.7	611.6	665.7	79.3	27.0	621.5	674.9
Nurse	247	24.3%	187	16.3%	6.6	6.1	356.7	252.5	54.0	10.1	364.8	259.2
Psychologist	12333	32.1%	8379	16.2%	6.9	6.7	385.8	367.1	55.7	13.1	394.0	374.5
Social worker	9112	27.3%	6624	15.4%	6.8	6.2	302.3	272.5	44.2	11.6	310.4	279.3
MFT	2784	26.4%	2050	14.0%	6.9	6.1	314.8	267.9	45.8	10.5	322.8	275.1
Counselor	6518	25.9%	4832	15.7%	6.8	6.6	313.0	299.8	45.5	11.5	321.1	307.9

Table 9

Treatment outcomes by age.

Age	Dropout	Recidivism	Total Cost $	Total Sessions *M*	Cost per Session $	Cost Effective
3	25.6%	16.9%	338.7	6.8	49.3	348.0
4	22.7%	20.6%	370.6	7.5	48.9	381.2
5	20.4%	20.4%	372.6	7.6	48.7	383.4
6	19.5%	20.9%	378.8	7.7	49.1	389.6
7	18.6%	22.5%	405.8	8.2	49.0	417.5
8	17.3%	22.9%	405.8	8.1	49.2	417.5
9	17.0%	24.0%	417.4	8.3	49.2	429.6
10	16.6%	24.3%	414.8	8.3	49.2	427.0
11	15.8%	24.6%	427.1	8.6	49.1	439.6
12	16.4%	25.7%	433.2	8.7	49.0	446.1
13	15.3%	25.4%	434.4	8.8	48.8	447.3
14	15.4%	25.1%	437.8	8.8	48.5	450.9
15	15.2%	24.3%	441.5	8.9	48.8	454.4
16	15.5%	22.1%	413.6	8.4	48.7	425.5
17	17.5%	18.1%	395.0	7.9	49.0	405.8
18	20.0%	16.7%	394.8	7.8	49.6	405.5