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# Client Change in Multi-Model Treatment: A Comparison of Change Trajectories in Group, Individual, and Conjoint Formats in a Counseling Center

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CLIENT CHANGE IN MULTI-MODEL TREATMENT: A COMPARISON OF  
CHANGE TRAJECTORIES IN GROUP, INDIVIDUAL, AND CONJOINT  
FORMATS IN A COUNSELING CENTER

by

Bryan K. Mickelson

A dissertation submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Counseling Psychology and Special Education

Brigham Young University

December 2008

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GRADUATE COMMITTEE APPROVAL

of a dissertation submitted by

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This dissertation has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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As chair of the candidate's graduate committee, I have read the dissertation of Bryan K. Mickelson in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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## ABSTRACT

### CLIENT CHANGE IN MULTI-MODEL TREATMENT: A COMPARISON OF CHANGE TRAJECTORIES IN GROUP, INDIVIDUAL, AND CONJOINT FORMATS IN A COUNSELING CENTER

Bryan Mickelson

Department of Counseling Psychology and Special Education

Doctor of Philosophy

Providing clinicians with a clearer understanding of how clients' recover over the entire course of therapy has important implications for referral and treatment strategies. The present study compares rates of change in 160 clients in group therapy with 6632 clients in individual therapy and 864 clients receiving both individual therapy and group therapy. Therapeutic outcomes were measured using the Outcome Questionnaire-45. Data was analyzed using Hierarchical Linear Modeling (HLM), also called Multi-Level Modeling (MLM), to produce recovery curves for clients in each group. Recovery curves showed that most change occurred in the early part of group therapy and slowed near the end. Rates of change for clients in group, individual and conjoint therapy formats were also compared. This study reports that no significant differences in rates of recovery were found between group and individual or group and conjoint treatment formats. However, a

significant difference was detected when individual and conjoint treatments were compared, with the individual sample improving at a faster rate.

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# 1 Comparing Client Change in Multi-Model Treatment

## Introduction

Group psychotherapy research has placed a great deal of emphasis on efficacy, the capacity for producing a desired result or effect, and treatment outcome of group and individual therapy. (Baines, Joseph, and Jindal, 2004; Bovasso, Eaton, & Armenian, 1999; Burlingame & Krogel, 2005; Burlingame, Furhriman, & Mosier, 2003; Kivlighan & Kivlighan, 2004). In an important study, McRoberts, Burlingame, and Hoag (1998), conducted a meta-analysis examining almost five decades of research on the efficacy and treatment outcome of group therapy. Their study reported that post-treatment means for group therapy differed significantly from wait-list controls (effect size = .90,  $t(5) = 2.73$ ,  $p = .04$ ). They also asserted that group therapy clients fared better than 82% of waitlist clients. Furthermore, in sections of the study comparing differential effectiveness of group and individual therapy formats, 55 of 60 studies showed equivalent effects. Their findings produced strong support for group as an effective mode of psychotherapy and its differential equivalency to individual therapy.

Unfortunately, these same authors also uncovered some disturbing trends in the outcome research literature. Researchers neglected utilizing comparative studies as a means to establish differential efficacy of group vs. other treatment formats. They also found an absence of methodological consistency in the existing literature. McRoberts et al.'s (1998) analysis identified cross study confounds such as client, setting, methodology, and therapist variables that had previously been poorly controlled. They identified possible confounding variables such as therapist alliance and treatment method. The McRoberts analysis established a pattern of inquiry by first investigating efficacy of group and individual therapy separately then determining differential effectiveness

though comparative research designs. In response to these findings they issued a call to increase comparative studies and look specifically at moderator variables.

In the past decade there has been a noteworthy resurgence in research establishing the efficacy of group therapy. Some of this research used comparative studies that looked at moderator variables (Oei and Broune, 2006; Sherman et al., 2004; Wilberg & Karterud, 2001). Pressure to establish group therapy as a cost effective alternative to individual therapy may have contributed to this resurgence (Freed, 2005; Kanas, 2006; McRoberts et al., 1998). Burlingame and Krogel (2004) reviewed two studies that compared group and individual psychotherapy in medical treatment settings. Other researchers have considered studies looking at the efficacy of group outcomes when applied to populations struggling with chemical dependency (Wiess, Jaffee, de Menil, & Cogley, 2004). Managed care's interest in cost-effective treatment modalities has fueled efforts to determine who needs therapy, how much is needed, and the differential effectiveness of delivery systems (Freed). Researchers studying individual psychotherapy have utilized methods to examine effectiveness using dose-response, rate-of change strategies, and HLM statistical procedures (Callahan & Hynan, 2005; Kadera, Lambert, & Andrews, 1996; Lutz, Lowry, Kopta, Einstein, & Howard, 2001).

Rates of change can be analyzed by HLM when there are sufficient data points spread over a number of sessions. The OQ-45 has been identified as a tool that can be used effectively in dose-response studies (Kadera et al., 1996). It has been recently used in several studies that consider rates of change between different conditions in individual therapy. (Harmon, 2006; Okiishi, 2000; Vermeersh, 1998; Vermeersh, 2004). HLM appears to be an appropriate statistical method to compare the differential effectiveness of

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group and individual psychotherapy. This is one of McRoberts et al.'s (1998) suggestions for improvement in studying group psychotherapy outcome.

#### *Statement of Problem*

Research examining individual therapy has led the way in developing methods to investigate the unique qualities of therapy by using dose-response analyzed by HLM. Group researchers have not taken enough advantage of these research designs. Though there has been a resurgence of comparative studies, they have failed to use these methods to determine differential effectiveness between individual and group psychotherapy. Additionally, no dose response studies have been conducted examining group psychotherapy. The likely course of recovery for participants of group therapy independent from other treatment modalities eludes comparison as well.

#### *Statement of Purpose*

The purpose of this study was to use dose response and HLM statistical strategies to, first, examine the improvement of clients as they complete a course of group therapy and, second, to establish the differential effectiveness of group, individual psychotherapy, and combined group and individual treatments. Properties of the HLM analysis will allow for the comparison of recovery in group, individual, and conjoint treatment modalities. By utilizing HLM as our tool for analysis it will also be possible to explore recovery patterns of clients in group therapy.

## Review of Literature

Few areas of American culture were unaffected by the fallout from World War II. The field of psychology was no different. As troops returned from combat, many of them struggled with the emotional effects of war. The need for psychological services emerged in work, education, family, medical, and social systems. One way clinicians responded to the growing need for services was by delivering therapy to groups of individuals rather than in the traditional one-on-one format. Many clinicians saw this method of therapy as advantageous beyond its ability to serve more than one client at a time. Group therapy provided a unique context for change that was impossible to duplicate in individual therapy. As is common with most new ideas, skeptics of the new format called for proof that group therapy led to a reduction of emotional or behavioral problems.

Group psychotherapy research has a long history focused on providing proof that group is effective. Studies dating back to the 1930's have shown that treatment outcomes in group therapy have generally been positive (Lambert et al., 2004). However, older studies have been criticized as lacking methodological soundness (Luborsky, Singer, & Luborsky, 1975). Inconsistent results and confusing conclusions reported by this early research left many mental health practitioners doubting the effectiveness of group treatment. Part of the effort to reassure practitioners that group therapy could be used effectively was to design research that compared group to other formats of therapy.

### *Comparisons between Group and Individual Therapy*

Comparing group and individual therapy formats helped clinicians create research compelling enough to persuade critics. When research investigating client improvement failed to provide the type of results necessary to quiet opponents, a format of research

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that compared new methods to better established ones became necessary. Called a *comparative study*, this research format directly compares the average clinical improvement of clients (also referred to as the “outcome”) who attended group, individual, or another form of therapy. In contrast, traditional outcome studies estimate the statistical significance of the average change from the initial session the end of therapy. Comparative studies have made a steady evolution since the post World War II era in an attempt to keep pace with a demand for the empirical validation of group therapy outcomes.

One example of a comparative study was conducted by Beahr (1954) and compared three formats of psychotherapy; group, individual, and a combination of the two. Outcomes were defined by the change in the level of discontentment the client reported post therapy. Discontentment was measured by a 230 question scale created by the researchers. The average differences between pre and post treatment scores for each format of therapy were directly compared using a simple statistical analysis. Results of the study concluded that a combination of group and individual therapy produces the greatest improvement over the course of therapy.

### *Appraising the Evolution of Group Comparative Studies*

The evolution of group comparative studies progressed slowly and struggled to provide adequate proof of group therapies efficacy. Attempts to validate group therapy were often criticized for problematic methodology and unclear conclusions. Researchers worked year after year to improve the quality of this research. Comparative studies emerged as the method of choice, but struggled to achieve prominence in the literature. Though evidence supporting the efficacy of group therapy grew, progress toward the

integration of comparative studies was slow as new issues plagued research efforts.

Understanding the progression and development of these research efforts since inception provides a context for understanding the need for the current study.

*Post World War II.* As the need for services increased after World War II so did the use of group therapy and, consequently, the need to validate its effectiveness. This process was complicated considerably by inconsistencies in group research methodology. Previous outcome research interests had primarily focused on empirically validating that persons receiving individual psychotherapy would improve over time. Once this was well established, researchers saw promise in using individual therapy as a baseline to compare the effectiveness of group psychotherapy (Luchins, 1947). Luchins' suggestion to use comparative research methods sprang from the lack of appropriate research models substantiating the efficacy of group therapy. He hypothesized that such models could produce rigorous, empirically supported data like those considering individual therapy formats (Budman et al., 1988).

Anecdotal reports of the therapeutic efficacy of group therapy seemed to be plentiful into the 1940s, yet a systematic and objective means of measuring outcomes, determining client progress, and understanding therapeutic factors could not be found (Cotton, 1948; Luchins, 1947). Luchins, while acknowledging reports of positive outcomes, urged researchers in group therapy to seek a more efficient, reliable, and empirical methods of defining outcomes in group therapy.

The lack of reliable techniques and sound methodology led to a similar argument by Cotton (1948). He not only questioned the validity of existing group research, he also questioned any claim that group therapy was an effective form of psychotherapy, based

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on the lack of empirically sound evidence. Luchins (1947) argued that, “While many reports claim that their programs had favorable effects, they do not generally indicate what the influences were, and how they were determined and measured” (p. 173).

Luchins suggested that future research should use a comparative format, utilize control groups when possible, and administer objective measures to determine outcomes so that results could be reliably compared to other modalities, such as individual therapy. Several studies published in subsequent years are evidence that researchers did attempt to use comparative formats and further define therapeutic factors specific to group psychotherapy (Baehr, 1954; Fairweather et al., 1960; Lieberman, Lakin, & Whitaker, 1968). However, these attempts were not adequate to provide the type of methodologically sound empirical evidence needed to establish the efficacy of group therapy.

*1960- 1980.* The 1960s and 70s produced research that failed to improve the state of group outcome efficacy. A modest increase in comparative studies continued to have problems similar to studies in past eras. In a review of outcome research literature from 1966 to 1975, Parloff and Dies (1977) made conclusions similar to those of Luchins (1947). This review showed that the entire body of literature surrounding efficacy in group therapy had not kept pace in providing the empirical results and sound methodology Luchins and Cotton (1948) requested. Parloff and Dies’ critique of available literature asserted several continuing problems in group outcome research: (a) many methodological problems were apparent, (b) studies observed group therapy performed by poorly trained therapists, (c) clear statements about underlying assumptions, postulates, and hypotheses were scarce, and (d) a lack of clarity had left many questions

unanswered about variations in client populations, therapist skills, techniques used, and duration of treatment. These criticisms are supported by two articles examining the research being done at the time. First, Stotsky and Zolik (1965) stated, “The results of controlled experimental studies do not give clear endorsement for the use of group therapy as an independent modality” (p. 825). In a book that reviewed available research literature, Meltzoff and Kornreich (1970) similarly suggested a lack of clarity when reviewing group outcome literature. In general, the most common criticisms of research conducted during this time included the lack of methodology yielding clear research findings and reliable evidence validating group psychotherapy as an effective treatment modality. A possible reason for the lack of sound methodology and the absence of evidence validating group therapy during this era may have been a deficiency of studies that directly compare group to other formats of psychotherapy available at this time.

A modest increase in independent and comparative studies in the early to mid 1970’s produced a hand full of studies that produced clearer research results. These results began to provide evidence supporting the long-held assumption that group therapy was as effective as other forms of psychotherapy. Specifically, a comprehensive review of outcome literature, performed by Luborsky et al. (1975) found “insignificant differences in the proportion of patients who improved by the end of psychotherapy” (p.1003). An additional study, directly comparing group and individual treatment in a university health service, came to similar conclusions (Rockwell, Moorman, Hawkins, & Musante, 1976). While the increasing numbers of comparative studies and the production of positive results were promising, they failed to meet the need for evidence in volume and quality.



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While studies produced in the early 1970s provided evidence that a modest trend toward comparative studies had begun, it was not enough to have a significant impact on the overall acceptance of group therapy's effectiveness. Luborsky et al. (1975) found only thirteen studies to include in their review of comparative studies while Parloff and Dies (1977) reported that studies directly comparing group to other treatments were not numerous enough to make any definite conclusions about efficacy. These problems proved difficult to overcome as future research was plagued by new issues.

*1980s to present.* In the 1980s, social, economic, and political interest renewed efforts to identify cost effective methods for treating psychological difficulties (McRoberts et al., 1998; Pilkonis, Imber, Lewis, & Rubinsky, 1984). Insurance companies and prepaid health insurance plans gave considerable attention to short-term and time-limited approaches to psychotherapy (e.g. solution focused therapies) (Budman et al., 1988). Group therapy sparked particular interest because of the economic advantage treating multiple patients simultaneously provided. Pressure generated by interested parties increased motivation for mental health professionals to pay attention to empirically validated brief therapies that result in positive therapeutic outcomes.

Even with the increased interest in outcome research, a limited number of comparative studies were conducted during in the 1980's. As requested by earlier research reviews, studies during this time began to look specifically at process variables and the strengths of group therapy. This small sample showed equality between group and individual therapy (Budman et al., 1988; Pilkonis et al., 1984; Tillitski, 1990). Unfortunately, the number of studies produced still did not meet the demand for evidence

of equality between individual and group psychotherapy. This trend continues to be an issue for concern.

*Reviewing Historical Trends in Comparative Studies*

The exact reason comparative studies did not become the norm is unclear and puzzling considering that claims of efficacy and even superiority of the two therapy formats have been made. In addition to the specific recommendations to use this type of research previously discussed, other researchers have eluded to a natural progression toward comparative studies. Lieberman et al. (1968) acknowledged efforts by clinicians and researchers to “build bridges” between group and individual therapy, speculating that comparisons between the two were natural considering that many clinicians had received a disproportionate amount of training emphasizing one-on-one formats of therapy. Baehr (1954) argued that as group therapists speculated about the effectiveness of group therapy and touted its unique therapeutic benefits, the only logical step in corroborating this claim was to compare treatment modalities in systematic research studies.

Surprisingly a trend toward using comparative studies to make a claim of superiority has been established; while a trend to use this research style to establish efficacy has been ignored recommendations. In fact, Luchins’ (1947) official recommendation to utilize comparative formats as a resource to assess the differential efficacy of group therapy has been widely ignored in the existing literature. Consequently, empirical data supporting the efficacy of group psychotherapy was primarily established using non-comparative studies that consider treatment modes separately. Instead, trends in the existing literature show comparative studies have been used to argue superiority which may be related to a decline in recent comparative studies prevents. Examples of

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these studies show that they provide support for the efficacy of group therapy and have identified a number of group therapy's strength but ultimately miss the mark.

*Superiority in comparative studies.* Comparative studies have often been used to demonstrate the superiority of treatment modalities (Pilkonis et al., 1984). In some cases these studies have shown group therapy to be superior to individual psychotherapy. For example, Irvin Yalom used a review of literature by Toseland and Siporin as evidence that group therapy was a more than viable alternative to individual treatment (as cited in Yalom, 1995). He contended that their review, which reported on 32 well-controlled experiments, showed results favoring group therapy. Twenty-five percent of the 32 studies concluded that group therapy was more effective than individual therapy; while results from the other seventy five percent showed no significant differences between the two (Yalom). Yalam's claim seems to ignore the fact that many of the studies s considered in the Toseland and Siporin review were conducted in a brief group therapy format: which may speak more to the strength of group therapy rather than to superiority.

Research conducted by others has identified several strength and specific advantages to using group therapy. A study by Budman and Springer (1987) uncovered important clues about the effectiveness of group therapy when compared to individual therapy. They reported that, clients on waitlists for group therapy experienced no difference in overall satisfaction when asked to wait for therapy to begin. In other words, being placed on a waitlist did not have a significant effect on outcomes in group therapy. According to this study, clients seeking individual therapy reported significantly less satisfaction at the end of therapy when placed on waitlists. This study also reported that

satisfaction for clients in individual therapy was significantly lower when placed on a waitlists.

Using comparative studies to prove superiority has also produced results that detract from the substantiation of group therapy. Not all comparative studies have shown group therapy to be as effective as individual therapy. In a study comparing group and individual cognitive therapy, Rush and Watkins (1981) reported that subjects receiving individual therapy had better therapeutic outcomes than subjects in group therapy. McRoberts et al.'s (1998) meta-analytic review speculated that discrepancies between outcomes of individual and group therapy in the 1980's were influenced by process effects and moderator variables that had been poorly attended to. This claim is consistent with earlier literature that identified possible strengths and limitations of group therapy. For example, Piper, Garant, Debbane, and Bienvenu (1984) reported that subjects in long-term group therapy, long-term individual therapy, and short-term individual therapy had similar rates of retention, outcome, and cost effectiveness. Interestingly, participants receiving short-term group therapy (group therapy averaging 23 sessions) performed significantly worse when outcome results were compared to other treatment formats (Piper). The authors of this study noted that client recovery in short term group therapy was substantial and would have been considered successful had it not been compared to long term group and individual therapy (averaging 76 sessions). Additionally, the authors acknowledged that differences associated with outcome were likely related to time variables rather than types of therapy.

*Efficacy in group therapy using comparative studies.* Ultimately a more important issue in the current study than that of superiority of psychotherapy modalities, and far

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more useful, is the broadening acceptance of group therapy's "efficacy", or its capacity for producing a desired therapeutic result or effect. In an important meta-analysis conducted a decade ago, McRoberts et al. (1998) reported that the compilation of available research provided strong evidence supporting the efficacy of group treatment. For many researchers the results of this analysis establish group psychotherapy as a viable modality of psychological treatment. According to this important study, client gains associated with group psychotherapy exceed the gains made by patients who received minimal treatment.

Furthermore, McRoberts et al. (1998) concluded that group psychotherapy seems to be as effective as individual therapy when considering various theoretical orientations, across a variety of settings, and over different client groups. Kivlighan & Kivlighan (2004) determined the evidence provided by the McRoberts et al. analysis convincing enough to assume equivalence in their study.

*Insufficiency of Evidence.* Though McRoberts et al. provided an impressive argument for the usefulness of group therapy, assumption about superiority or even efficacy may be a bit premature based on the lack of comparative studies that have emerged in recent years. McRoberts et al. reported an alarming absence of studies directly comparing group and individual therapy. In the almost 50 years preceding their study, only 23 studies that directly compared group and individual therapy could be found in the literature. This was compared to 112 studies that considered adult groups independent of other forms of therapy. To illustrate this point, in the two years prior to the publication of the McRoberts et al. meta-analysis no comparative studies could be found.

An overview of group outcome literature's historical development shows an insufficient increase in the number of studies, the methodological soundness, and the clarity of statements about the effectiveness of group psychotherapy. Unfortunately, financial and politically driven research seems to be responsible for continuing problems plaguing the field. Motivations to capitalize on cost-efficient treatments resulted in poorly conducted research, skewed outcomes, and biased interpretation of research results (McRoberts et al., 1998).

*Moving Away from Historical Trends*

Recommendation made by the McRoberts et al.'s (1998) study motivated researchers to move away from the historical trends that have undermined group research for over 50 years. This study is only a decade old, but it has had a significant effect on the direction and focus of the research conducted in the field of psychology. Although comparative studies continue to lag behind, other research recommendations have been heeded and have produce valuable information about the strength and weaknesses of group therapy.

As the number of conflicting results of early outcome studies on effectiveness of group therapy grew and confusion created by conflicting interpretations proliferated, efficacy of group psychotherapy outcomes needed clarification and direction. meta-analysis identified many of the field's methodological failings and suggested a clear and ultimately defining direction for group outcome research. McRoberts et al.'s (1998) concluded that group therapy consistently produced significant improvements with subjects who had suffered from a variety of psychological disorders. The analysis also reported this to be true across varying group treatment modalities. Even with these strong

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findings, the problems identified in the literature led these researchers to encourage continued investigation of group therapy's effectiveness.

*Recommendations from recent research.* Several recommendations were made from the McRoberts et al. (1998) meta-analysis in the hope of providing corrections that would guide the research efforts that would follow. These recommendations have had a profound effect on the directions group research has taken in recent years. In reaction to historical flaws mentioned above, McRoberts et al. recommended that research in group therapy strive to: (a) initiate a resurgence of comparative studies evaluating the merits of group therapy as a substitute for individual therapy, (b) expand the number of studies that identify possible moderator variables to explain differential effectiveness between individual and group therapy.

*Underutilization comparative studies.* Like many of the existing research reviews, McRoberts et al (1998) found that comparative research methods are an underutilized means of validating group therapy. At the time of their study, there were fewer than expected studies that compared outcomes between group and individual psychotherapy going back 50 years. This lag contributed to the first recommendation by McRoberts et al., encouraging researchers to add comparative studies to the existing pool of research.

The few studies that have since addressed this need include Shechtman (2003) and Shechtman and Ben-David (1999). A review by Burlingame and Krogel (2005) acknowledged comparative outcome studies conducted by Baines et al., (2004) and Turner-Stokes et al. (2003). Each of these studies appears to show equal effectiveness for group and individual therapy. It is intended that the results of the current study will add to the existing literature on comparative studies of group and individual therapy and add a

third comparison group of subjects participating in both individual and group therapy. The current study will also consider possible moderators variables.

*Expansion moderator variable research.* Following McRoberts et al.'s (1998) second recommendation to expand the number of research studies that investigated moderating variables, a sizeable number of journal articles have come forth. Studies that identify moderator variables provide valuable information that can help guide the development and application of group therapy. Examples of appropriate moderator variables include: unique client populations, therapist differences, methodology of studies, specificity of group formats, and treatment variables. Moderating variables were considered in a meta-analysis by Burlingame et al. (2003). Their analysis reported that clients receiving group therapy improved significantly when compared to waitlisted clients. The same analysis identified mixed gendered groups as performing significantly better than male only groups.

Another interesting finding showed that diagnostic categories affected outcomes. For example, clients receiving treatment for depression and eating disorders made more improvement than those diagnosed with stress-related and medical disorders. Other studies that consider moderating variables and their effect on group therapy outcomes focus on specific populations of group therapy participants (Hoag & Burlingame, 1997; Lorentzen & Høglend, 2005; Shechtman, 2003). Shechtman reported that group therapy performed similarly to individual therapy for a population of aggressive adolescent males. Lorentzen and Høglend reported positive outcomes for clients attending group therapy that had previously been treated in a long-term psychiatric setting. Finally, Hoag and



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Burlingame reported that children and adolescents attending group therapy made significant gains when compared to waitlist controls.

Chemical dependency issues may also serve as a moderator variable. Several studies examine the efficacy of group outcomes when applied to populations struggling with chemical dependency (Washington & Moxley, 2003; Wiess et al., 2004). These studies confirm the efficacy of using group therapy with those struggling with chemical dependency problems. As mentioned previously, there seems to be a growing number of studies analyzing specific group formats such as behavioral therapy and cognitive-behavioral group treatments (Himle et al., 2001; Rosenberg & Hougaard, 2005; Shechtman & Pastor, 2005). Each of these studies supported the use of group treatment format. Still more research examining moderating variables considered group therapy for victims of sexual abuse, medical problems such as dementia, HIV, and cancer survivor patients (Courneya et al., 2003; Craissati & McClurg, 1997; Dobkin & Da Costa, 2000; Gilbert, & Mason, 2005; Nolan et al., 2002; Ryan, Nitsun, Gilbert, & Mason, 2005; Scott & Clare, 2003; Rousaud, 2007). Results of these studies reported positive findings such as improved social functioning, higher pre-to post GAF scores, improved psychological functioning, and improved long-term coping.

With regard to less-researched moderators, Wilberg and Karterud (2001) attempted to evaluate a small collection of literature investigating group therapy as an effective treatment for personality disorders. Their conclusions support using group therapy for this diagnostic group. Stoddart, Burke, and Temple (2002) considered bereavement groups for the intellectually disabled with positive reports. Additionally, Kivlighan and Kivlighan (2004) and Burlingame and Barlow (1996) both examined

therapist variables in group therapy. Kivlighan and Kivlighan reported that though no differences were found between group and individual outcomes, the therapeutic intentions of therapists may be very different. Additionally, Burlingame and Barlow showed that outcome for professional and non-professional group leaders were not significantly different.

*Non-comparative group research.* In recent years a growing body of literature has provided information about independent qualities of specific group therapy formats and unique client populations without using comparative studies. Research on group therapy that looks at outcomes independent of other therapy formats has continued at respectable rate. This sub-set of group research considered group therapy separate from individual treatment. Research conducted by Lorentzen and Høglend (2005), Kusters, Burlingame, Nachtigall, and Strauss (2006), and Bovasso, Eaton, and Armenian (1999) as well as a meta-analysis performed by Burlingame et al. (2003) are examples of continuing research that offer an independent look at group therapy modalities. It is worth noting that the majority of these studies support the following historical research assertion; that group therapy significantly contributes to better outcome results when compared to wait-list control groups and equivalent when compared to individual therapy. This body of literature is evidence that research trends are heeding the call to investigate moderator variables.

#### *Considerations for Combining Individual and Group in Research*

A review of existing group literature was been useful in identifying important considerations essential to a full understanding of comparative research and in designing a group therapy study that avoids possible pitfalls. Researchers have inadvertently

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weakened the validity of their studies by including factors or adopting research methods that skew their results and conclusions. To avoid making this mistake the current study has been careful to consider how the comparison of independent studies, the effects of confounding variables, the influence of sub-formats of either group or individual therapy, and concerns about provider costs have impacted other research endeavors.

### *Problems with Comparing Independent Studies*

In addition to problems created from pressure to proclaim group therapy superior and efficient, group researchers have, at times, attempted to compare the results of studies that were conducted independently. The results of two studies conducted separately, one considering group and the other individual therapy, cannot be successfully used to compare differential effectiveness. This is particularly problematic when the results of separate studies used in comparison when there are dramatic differences in their methodology or when one of the therapy formats is used outside of its intended context. For example, in several studies group was used as a convenient, cost effective vehicle for the delivery of a treatment format designed to be used in individual therapy (McRoberts et al., 1998). Conducting research when group therapy is delivered in this way or when delivered by inexperienced therapists damages the integrity of this body of literature. These circumstances weaken the identity of group psychotherapy as understood by those who practice it effectively (Budman et al., 1988).

### *Themes Related to Confounding Variables*

McRoberts et al.'s (1998) meta-analysis has highlighted confounding variables that may have influenced the results of many comparative studies. McRoberts and his colleagues closely examined each of these articles and offered a critical analysis and

explanation for why their results were in stark contrast to the accumulating evidence supporting equality between modalities.

*Cognitive-behavioral sub-formats.* Cognitive-behavioral sub-formats of individual therapy appear to provide legitimate advantages over the same sub-formats of group therapy. Several studies considered in the McRoberts et al. analysis alleged that individual therapy was more effective than group for treating depression. A careful analysis of the methodology of these studies revealed that these studies compared specific sub-formats of each therapy type; concluding that individual cognitive behavioral therapy may be more effective for treating depression than group-based cognitive behavioral therapy. The results of these research studies only addressed the differential effectiveness of cognitive-behavioral group versus cognitive-behavioral individual therapy. Clients who struggled with depression and were treated with less specific forms of these therapy formats were not considered in these studies. Thus, these findings cannot be generalized to other formats of group therapy or to the group modality as a whole.

*Method allegiance.* A variable that seems to be positively correlated to superiority of individual therapy is the allegiance of the therapist to a specific treatment. Researchers with allegiances to individual therapy were more likely to find it superior to other treatment modalities. Conversely, therapists committed to group therapy had greater success with outcomes than compared to those who did not (Lorentzen, Sexton, & Høglend, 2004).

*Population nonequivalence.* Another important variable noted by McRoberts et al. (1998) involved the populations being used in comparative studies. Results from research on group and individual outcomes were assessed independently and then compared to one

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another. This proved problematic in some cases because participant samples were not always from the same population.

More specifically, in one study participants in group therapy were recruited from inpatient populations while the participants in individual therapy clients were selected from a modestly disturbed university population (McRoberts et al., 1998). Good research practices mandate making comparisons of similar populations. Sampling from dissimilar populations has a negative impact on the validity of findings and results in an unfair comparison of treatment modalities. Conclusions made by these studies are suspect and should be heavily scrutinized.

### *Strengths of Homogeneous Sub-formats of Group Therapy*

In addition to their critique of research results and methodology, McRoberts et al. (1998) identified several apparent strengths of group when compared to individual therapy. They reported advantages for group therapy when it was conducted with specific sub-formats. These specific sub-formats included venues where the clientele attending therapy had homogeneous therapy issues such as chemical dependency, vocational problems, or eating disorders.

One example of a recent study that supports the claim of efficacy of groups for specific populations was conducted with bulimic patients participating in group therapy. Results of this study concluded that at the end of treatment all but one participant exhibited no bulimic symptoms (Valbak, 2001). Residual benefits included appropriate eating behavior and weight, development of positive relationships (including marriage), increased rates of desired pregnancy, no borderline thinking or defensiveness, and a

cessation of self destructive behavior (Valbak). Regrettably, this study was not conducted using a comparative format.

### *Considerations Impacting the Direction of Research*

The unfortunate truth about the future of therapy and research is that economic factors will always play some role in decision making. In addition to an ethical obligation to follow the recommendations of McRoberts et al. (1998), other considerations have impacted the direction of more current group research efforts. Indeed, both the method and results of such studies directly impact the use of group therapy (Burlingame et al., 2003).

### *Cost Containment with Group Therapy*

Studies that show group therapy to be equivalent to individual therapy can serve as a rationale for using group therapy to cut costs. Group therapy can provide mental health services to four to five times as many people for the same cost to an agency as one individual therapy session; resulting in greater profits while depleting fewer resources.

### *Allocation Resources in Agencies*

Opting to use group therapy has an advantage when considering how already sparse resources are to be allocated. One argument for using group therapy may lie in the logic of treating multiple clients with a single therapist. In situations in which there is a scarcity of resources, group therapy offers an empirically validated, cost-effective treatment option. HMO executives have already projected an increase in the use of group therapy for specific diagnostic categories (Taylor et al., 2001). Finding cost-effective alternatives to individual therapy reinforces the need for further methodologically sound

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comparative studies. One method that shows promise to illuminate such alternatives is the dose-response method.

### *Strategies Emerging for Dose-by-dose Investigation of Outcomes*

This study attempts to add to the richness of the existing literature and initiate further understanding of previously established research concerning group therapy and its relationship with other therapy formats. In a 1996 report of their findings, Kadera et al. summarized the development of a research methodology that they believed to be more effective. Kadera et al.'s work presented a mathematical model that yielded a linear function descriptive of client change during therapy. This mathematical model defined a single unit of treatment as a *dose*.

The Kadera et al. (1996) study tracked the recovery of 64 college students who participated in individual therapy. Participant recovery was recorded and analyzed on a dose-by-dose basis. This model of analysis led to development of a format for determining relationships between the dose and its effect on therapy outcome that can be graphed on a session-by-session basis. This type of research methodology has been commonly referred to as dose-effect or dose-response modeling. The graphical curves produced by this analysis, called trajectories, provided information that helped clinicians to understand the rate by which clients recover in individual therapy (Kadera et al.).

Since the inception of this new model, several studies have utilized similar formats of the dose-effect model to evaluate outcomes in psychotherapy (Bovasso et al., 1999; Callahan & Hynan, 2005; Lutz et al., 2001; Wise, 2005). Dose-effect modeling as a format of analysis contributes to incremental validity of individual psychotherapy within the literature. Utilizing dose-effect modeling gives information that can be used as a

common language for mental health workers to evaluate treatment progress while providing feedback for trainees, supervisors, and experienced therapists (Lutz, Martinovich, Howard, & Leon 2002).



### Method

A review of current group psychotherapy outcome literature revealed no comparative studies using a dose-response format. Thus, a study that compared recovery trajectories associated with individual, group, and conjoint (group and individual) psychotherapy appeared warranted. Generating such recovery curves showed potential to make it easier to evaluate both the comparative efficiency of each method, and provide insight into client response in the early stages of treatment. The purpose of this study was to fill a void in the literature by determining the typical client response to psychotherapy across three treatment modalities. This study used a dose-response format to facilitate further understanding of session-by-session recovery in group, individual, and conjoint psychotherapy treatments. This was accomplished by defining the requirements for inclusion in the study, using an archival data set to collect eligible participants, and comparing the average clinical improvement of individuals in each the treatment formats.

### *Participants*

Participants for this study were college students from Brigham Young University (BYU) and clients of BYU's Counseling and Career Center (CCC). They were assigned by therapists at the CCC (including licensed psychologists, psychology interns, and advanced psychology trainees) to one of three treatment modalities: group only, individual only, and conjoint therapy. The CCC provides psychological services for full-time university students on an outpatient basis. It is assumed that clients who utilized the university counseling center are a representative demographic of the university's general

population. Demographics were expected to represent ages, races, genders, religious affiliations, and marital statuses typical of the student population.

Clients were referred to the counseling center by university agencies, clergy, concerned friends and family members, and by self-referral. Therapy at the CCC was provided by practitioner students, para-professionals, dual-appointed counseling psychology faculty, and full-time counseling center faculty. Practicum students, interns, and externs received at least one hour of supervision per week. Supervisors reviewed the case notes of supervisees while giving feedback on case conceptualization and intervention. Supervisees and supervisors utilized a variety of theoretical orientations such as cognitive-behavioral, humanistic, existential, psychodynamic-interpersonal, and integrated-eclectic. Of the clients at the center, only 160 students were referred to the group only category (defined later in this chapter).

Clients who attended therapy at Brigham Young University's counseling center gave consent to make information collected by the counseling center available for research purposes. Each participated in a 30-50 minute intake session and, based on the therapist's assessment of client's needs, was referred to the appropriate treatment modality. Participants for this study were obtained from the archival data sources provided by the Counseling and Career Center. Initiated in 1996, the university counseling center data base has collected the demographic information and OQ-45 data of over 19,000 clients. Participants were sorted into therapy modalities by criterion that will be outlined hereafter. Demographic information was collected and considered for its impact on outcome. This data includes the following: age, gender, religious preference, race, date of birth, and marital status.

Study participants had a variety of DSM IV diagnoses including Axis I disorders such as major depression, anxiety disorders, eating disorders, and Axis II disorders. This study, does not consider diagnostic categories as part of the analysis. Concerns about varied diagnostic practices and the absence of rigorous diagnostic criteria have influenced the decision to omit this information as a variable in the current study. The difficulty of assuring accuracy in diagnostic categories and the questionable reliability of available diagnostic instruments have affected this decision. For purposes of analysis, the current study treated participants as a heterogeneous whole. Simply stated, the likelihood that clients in therapy groups are struggling with differing therapeutic issues is without question, but identifying such as a variable of the study is not a viable option.

### *Treatment Modalities*

Participants in this study were sorted into one of three treatment modalities. Modalities are defined as follows: 1) group only 2) individual only and 3) conjoint therapy. The term “treatment modality” is used interchangeably with “treatment format” for duration of this study. Participants who received additional forms of treatment (e.g. couples therapy, biofeedback or other activities sponsored by the collection site) that may have had therapeutic benefit were excluded from this study.

### *Group Only*

Participants in the group only category were individuals who attended group therapy exclusively. The results of two pilot studies conducted previous to this study revealed that most participants attended individual therapy for a short period of time before being referred to group. Based on this information, it was determined that as a condition of the group only category participants could only attend two individual

therapy sessions total (not including the intake session) to remain eligible for the group only category. For the purposes of this study “group therapy” is defined as any variety of group treatment including: didactic, psycho-educational, and process-orientated.

#### *Individual Only*

The individual only category consisted of participants who attended individual therapy exclusively. In addition to this initial requirement two other criteria were necessary for inclusion in this category. Participants needed a score from the OQ-45 at intake and had to have at least one OQ score from an individual session.

#### *Conjoint*

The final category included in this study was the conjoint therapy sample. This category was composed of those participants that attended a combination of group and individual therapy. This means that the participants attended an intake session and some combination of group and individual therapy during a single course of therapy. To be included in the conjoint category, a participant must have attended at least one group session and at least three sessions of individual therapy. Many of the participants in the conjoint treatment format attended two sessions of therapy per week. However, participants needed only to have taken one OQ-45 in the course of the week.

#### *Measure*

The Outcome Questionnaire-45 (OQ-45) was used to track patient outcome recovery. The OQ-45 is a 45 item outcome measure that assesses patient functioning. The OQ was designed as a self-report scale to measure client progress or deterioration in therapy. It has been shown to be an effective way to measure outcome when used as a repeated measure of change during the course of treatment and is designed to be used

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across client diagnosis (Liebert, 2006; Vermeersch, Lambert, and Burlingame, 2000). It was selected for use in the current study because of its resistance to testing effects; problems that occur when clients become accustomed to taking some measures. The OQ-45 appears to adequately detect changes made by counseling center clients from session to session (Vermeersch et al., 2004).

The OQ-45 has a maximum score of 180 and is separated into three subscale scores. It is scored on a 5-point Likert Scale (0=never, 1=rarely, 2=sometimes, 3=frequently, 4=almost always). High scores on the OQ-45 are interpreted to indicate more distress; lower scores suggest less psychological distress. As the clients' scores fall during a course of therapy, they are construed as recovering.

The OQ-45 was designed to assess four domains of functioning: symptoms distress, depression and anxiety, interpersonal functioning, and quality of life, though these four domains are not used in this study. Research has shown the OQ-45 to have adequate reliability. Consistency, as reported by Lambert et al. (2004), was determined to be  $r = .93$  and a three week test-retest value of  $r = .84$ ; both of which are considered adequate. Students who participated in the current study were assumed to be given the OQ-45 at the time of intake and prior to each subsequent *session*. However, because this is a "naturalistic" study, similar to the one conducted by Harmon (2006) and Okiishi (2000), not all of the clients completed the OQ-45 nor did they attend sessions on a consistent basis. Thus, the data collected from these students includes missing data points. The missing data is acceptable for this study due to the advantages of the analysis chosen for this study. This will be further explained later on in the chapter.

*Study Parameters*

It is likely that some clients included in the study have attended therapy at the collection site prior to the course of therapy used in the current study. In these cases it is acceptable to use the data collected as long as it can be considered a new course of therapy. As per policy at the CCC, an absence from treatment for 6 months or more constituted the conclusion of an episode of treatment. Returning to treatment after a six month absence is considered the beginning of a new treatment episode.

By defining the three categories or modes of therapy, the process of setting parameters for the study has begun. It is necessary to continue to refine these parameters in order to eliminate possible extraneous factors that affect outcomes. For instance, defining what is meant by a “course of therapy” is vital to recreating this study in the future. For the purpose of this study, a course of therapy was defined as a period of treatment that begins with an intake session and continues for no less than one session and no more than 21. Participants are still included in the study if they attended more than 21 sessions but only the first 21 are used in this study.

*Data Analysis*

Once the data set was compiled, it was analyzed utilizing Hierarchical Linear Modeling (HLM), also known as Multi-level Modeling (MLM). Data were analyzed for differences in rates of change between samples using the mixed procedure (PROC MIXED) of the SAS System. HLM measured the effects of treatment sample on the statistical model representing the data and the mixed procedure generated individual slopes and y-intercepts for each of the three treatment samples. It also produced the slope and y-intercept for the entire sample. The ability to analyze the data in this way was

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beneficial to this study. The overall goal of these analyses was to describe the average rate of change trajectory for group therapy and to find out if there are differences between group, individual, and conjoint treatment modalities.

### *Treatment Dose as Fixed Effect*

A model of change needs a predictor to represent time. In the case of this study time is represented in terms of treatment dose. To evaluate the performance of such a variable (or any other variable) in the model, it is helpful to fit an equation that represents the data statistically. This equation is referred to as the *unconditional means model* and provided a baseline to evaluate the addition of predictor variables later in the modeling process. It is based on the means of person's scores and considers no other conditions. The unconditional means model was compared to other models that included predictor (confounding) variables in order to optimize model fit. The first step in creating such a model was to establish how time would be represented in the model.

### *Unconditional Means and Unconditional Growth Models*

The unconditional means model is an equation fit to the sample data and used as a baseline to determine whether the addition of predictor variables will improve the fit of the model. By adding a time variable to the unconditional means model (like session in therapy) it becomes the *unconditional growth model*. The unconditional growth model now has the ability to describe an individual's change trajectory in terms of initial OQ score and rate of change (growth). The unconditional means model lacked this ability because it considered the means of the individual without consideration of time. Fitting a model to the data and defining a predictor are essential to the current study.

*Variable Transformation*

Figure 1 represents a random sample of 16 cases collected from the data set. When these cases were used as a reference for determining linearity or nonlinearity, no clear pattern was visually evident. Without sufficient evidence to determine the most likely path of recovery, a method for fitting the unconditional means model to the data is required. This procedure is described by Singer and Willet (2003) as data transformation, a simple and common approach to fitting models that have nonlinear change trajectories. Singer and Willet argued that data transformation is the preferred format for dealing with non-linear data. Their first argument for this approach is the benefits of needing only intercept and slope to describe the form of the line that is achieved through transformation. They also argue that the metric of many instruments is ad hoc and neglects to provide well-accepted intuitive anchors. This type of analysis is not much worse off when using a transformed alternative. “It matters not whether you conduct analyses in one arbitrary world (the original metric) or another (e.g., the ‘square root’ metric). Either metric allows you to track individuals over time and to identify predictors associated with their differential patterns of change (p. 209).”

*Rule of the bulge.* Mosteller and Tukey’s (1977) *rule of the bulge* provides a theoretic approach to data transformation that produces a trajectory that approaches linearity. Because of the unclear pattern of the random sampling provided by Figure 1, it was necessary to use a trial and error approach to fitting the data. The *rule of the bulge* approach was considered when determining whether a transformation was required and which transformation was appropriate to improve the model.



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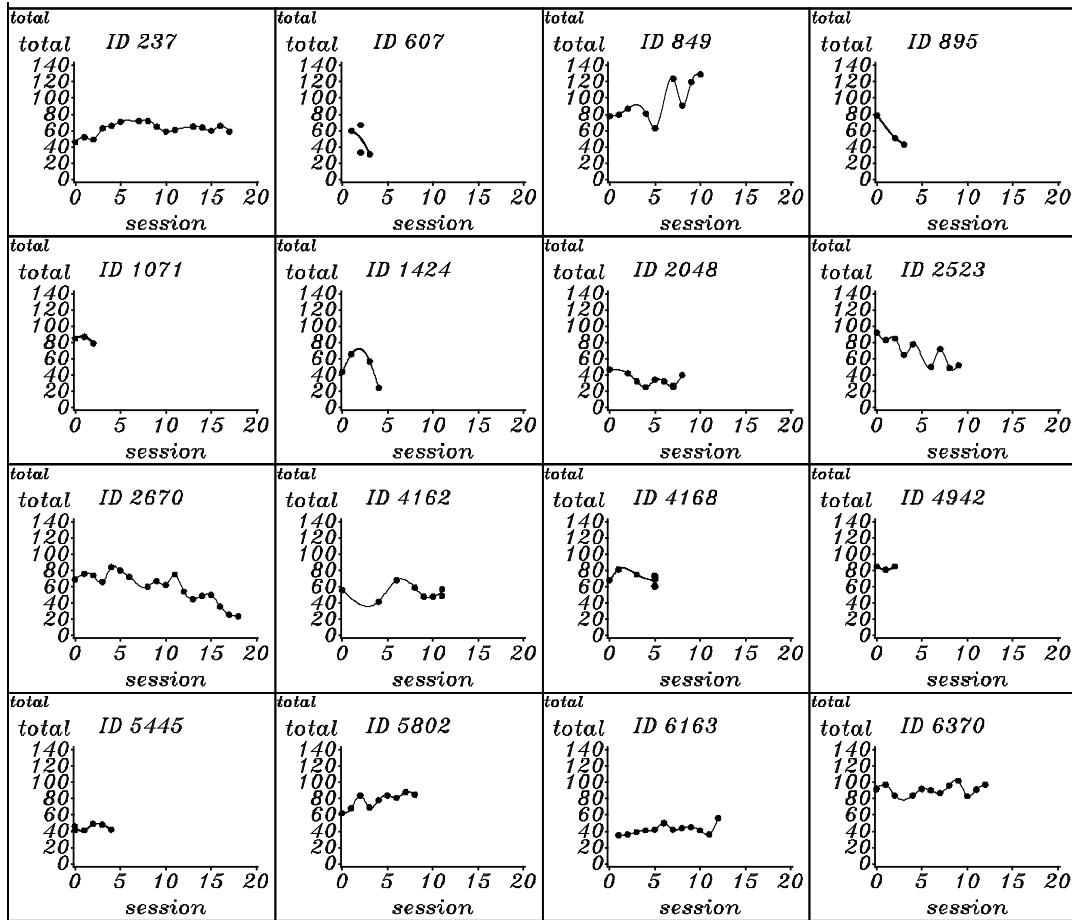


Figure 1. Individual Growth Plots for 16 Randomly Selected Cases.

*Ladder of powers.* Mosteller and Tukey presented an ordered list of potential transformations known as the *ladder of powers* (a term used to describe a hierarchy of transformation options). The trial and error approach is guided by the knowledge that the variable  $V$  will approach linearity by either a move down the ladder (e.g.,  $\log V$ ,  $V^{1/2}$ ,  $1/V$ ,  $1/V^2$ , etc.) or up the ladder (e.g.,  $V^{1.5}$ ,  $V^2$ ,  $V^3$ ,  $V^4$ , etc.). To determine the best fit for the analysis of data in this study, it was necessary to move both up and down the ladder.

*Time Variable for Treatment Dose: Sessions or Weeks*

One potential problem in creating a model that used treatment dose to measure time was evaluating the effectiveness of variables that represent treatment doses in the model. This study had two options, expressing time in a session by session (*sessions*) format or a week by week (*weeks*) format. The first step in considering *sessions* as a variable was to create a model that represents the non-transformed variable. The second step was to create additional models, based on the rule of the bulge, that represent transformations of the *sessions*' variable. This step was repeated for the *weeks* variable. The third step was to determine the best model fit by comparing all transformations of treatment dose variables.

*Sample as a Predictor in the Model*

The next step in the process of constructing a multilevel model to examine the effects of treatment modality on outcome was to consider models that included membership in one of three treatment samples as a predictor variable. To account for the effect of treatment, sample dummy variables were used to represent each category of treatment sample (i.e., *conjoint*, *group*, *individual*). The most useful statistics used to determine model fit (and indirectly to test parameters included in the model) are

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Deviance, Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC). These goodness-of-fit statistics are standards of a parameter estimation method referred to as full maximum likelihood (FML). Rather than just describing the fit of the variance components, the fit statistics of FML describe the fit of the entire model to the sample data. The FML method produces estimates for the model's parameters that maximize the logarithm of the joint probability of obtaining the sample data, commonly referred to as the log likelihood. The Deviance statistic represents the log likelihood multiplied by -2; this allows the differences between a pair of nested models to be compared. The AIC is based on the log likelihood but also includes a penalty for the number of parameters included in the model. In a complex model that includes more parameters, the log likelihood can increase even when the parameters have no effect on the model. In these cases the AIC statistic compensates for the increase. BIC is similar to AIC in that it includes a penalty for models that contain more parameters, but it also includes a penalty for sample size. For these goodness-of-fit statistics a smaller value indicates a better model fit.

### *Covariate Examination and Control in the Model*

Once the unconditional growth model was determined (which identified an appropriate variable for treatment dose) and the effects of treatment sample were examined, the next step was to evaluate the effects of covariates on the model. After covariates were identified, their impact as predictors on initial OQ scores and rates of change were assessed. Subsequently, the effects of significant covariates were controlled and rates of change by treatment sample were compared to see if they were significantly different from one another.

## Results

The results of this study were produced by Multi-level Modeling analysis conducted using mixed procedure (PROC MIXED) of the SAS System. This analysis included demographic information, fitting the unconditional means model, fitting the unconditional growth model, determining a time variable for treatment dose, considering the effects of covariates on the model, and describing the expected linear trajectory of treatment modality.

### *Treatment Group Demographics*

Treatment group membership was carefully assigned according to the criteria described in the methods section. Of the 7656 individuals who qualified for inclusion in the study, less than three percent of them qualified for inclusion in the group only format sample. The conjoint format sample accounted for about 11 percent, while the individual only format accounted for almost 86 percent of the students who utilized therapy services in one of the conditions. Demographic information was collected for the individuals of each treatment format and considered as possible covariates in the modeling process; these included: gender, marital status, citizenship, and whether or not the individual was of U. S. Birth. Table 1 and Table 2 show the demographic make up for each of the three treatment modalities in greater detail.

### *Group Only*

The group sample consisted of 160 subjects having at least two group treatment sessions and two or fewer individual sessions.

Table 1

*Demographics by Sample*

Sample	Variable	<i>n</i>	Percent	Mean	Min.	Max.
Group Only	Female	68	42.5			
	Male	92	57.5			
	Age			23	17	37
	Total Sessions			6.5	2	21
	OQs			5.1	2	23
Individual Only	Female	4243	64.0			
	Male	2389	36.0			
	Age			22	17	36
	Total Sessions			6.2	2	21
	OQs			6.7	2	42
Conjoint	Female	538	62.3			
	Male	326	37.7			
	Age			22	17	45
	Total Sessions			12.7	3	21
	OQs			6.8	2	22

Table 2

*Additional Demographics by Sample*

Sample	Variable	Country		Data Missing
		USA	Other	
Group Only	citizenship	94%	6%	0%
	birth country	52%	5%	43%
Individual Only	citizenship	93%	7%	0%
	birth country	58%	5%	37%
Conjoint	citizenship	96%	4%	0%
	birth country	63%	5%	32%

This sample was 43% female, 57% male, 39% married, 6 % non U.S. Citizens, and 15% non U.S. Birth. Notably, the group only sample has the highest percentage of male participants, but is otherwise demographically similar to the other treatment formats.

#### *Individual Only*

The individual only sample consisted of 6632 subjects having at least two individual treatment sessions and no group treatment sessions. This sample consisted of individuals who identified themselves as 64% female, 36% male, 39% married, 7% non U.S. Citizens, and 13% non U.S. Birth.

#### *Conjoint*

The conjoint sample consisted of 864 subjects having at least three individual treatment sessions and at least one group treatment session. This sample was 62% female, 38% male, 33% married, 4% non U.S. Citizens, and 3% non U.S. Birth.

#### *Data Analysis Results*

Once the demographic information was collected and analyzed the focus of the analysis turned to determining a parameter in the model to predict time. An analysis was conducted to estimate the *unconditional means model*, then in order to establish a time variable and evaluate additional predictor variables the *unconditional growth model* was used. Results from the modeling procedures closely resembled the results of two pilot studies. The analysis concluded with the establishment of average change trajectories for each treatment format and a comparison of their overall performance in the study.

*Fit to the Model*

*The unconditional means model.* The *unconditional means model* constitutes a statistical representation of the grand mean of the entire sample excluding any possible parameters. The results of fitting the model to the sample data are presented in Model A of Table 3. The grand mean across individuals and all occasions was represented by the fixed effect  $\gamma_{0c}$  and is 62.8. A rejection of the null hypothesis ( $p < .001$ ) confirmed the grand mean to be non-zero. The model has good precision as demonstrated by the standard error (0.234). The standard error for each parameter is shown in parentheses in Table 3. Subsequent tests of the null hypothesis also showed the variance components to be non-zero ( $p < .001$ ),  $\sigma_{\epsilon}^2$  for the estimated within-person residual variance and  $\sigma_0^2$  for the estimated between-person variance. An evaluation of the estimated within-person residual variance ( $\sigma_{\epsilon}^2$ ) and the estimated between-person variance ( $\sigma_0^2$ ) in the unconditional means model resulted in the intra-class correlation coefficient, indicating that 69% of total variation in OQ scores was attributable to differences in subjects. Leaving 31% of the total variance unaccounted for in the model. These results showed that additional variability remains to be accounted for by testing additional predictors, and induced further investigation.

*The unconditional growth model.* Once a model for the entire sample was established, the most likely significant parameters were added to the model. This new model, the *unconditional growth model*, identified several parameters that had a significant effect on the model and improved model fit. Model B1 of Table 3 presents the statistical results of fitting the unconditional growth model to the sample data.

Table 3

*Fitting Multilevel Models Comparing Treatment Dose Variables*

Fixed effects		Parameter	Model A	Model B1	Model B2	Model B3	Model B4
				<i>sess<sub>ij</sub></i>	<i>sess1_5<sub>ij</sub></i>	<i>lnsess<sub>ij</sub></i>	<i>sqrtsess<sub>ij</sub></i>
Initial status, $\pi_{0i}$	Intercept	$\gamma_{00}$	62.759*** (0.234)	67.263*** (0.251)	65.424*** (0.242)	70.156*** (0.272)	70.173*** (0.273)
	Intercept	$\gamma_{10}$		-1.597*** (0.037)	-0.415*** (0.011)	-6.441*** (0.133)	-5.003*** (0.103)
Rate of change, $\pi_{1i}$	Intercept	$\gamma_{10}$		-1.597*** (0.037)	-0.415*** (0.011)	-6.441*** (0.133)	-5.003*** (0.103)
	Intercept	$\gamma_{11}$					
Variance components							
Level 1	Within-person	$\sigma_{\varepsilon}^2$	175.97*** (1.136)	128.48*** (0.903)	136.10*** (0.954)	126.58*** (0.881)	126.45*** (0.880)
	In initial status	$\sigma_0^2$	381.75*** (6.741)	423.12*** (7.800)	406.04*** (7.269)	465.20*** (9.138)	464.77*** (9.155)
Level 2	In rate of change	$\sigma_1^2$		4.229*** (0.166)	0.302*** (0.015)	67.541*** (2.036)	40.265*** (1.243)
	Covariance	$\sigma_{01}$		-9.272*** (0.830)	-1.397*** (0.237)	-66.522*** (3.423)	-50.856*** (2.667)
Pseudo R <sup>2</sup> statistics and goodness-of-fit							
	$R^2_{y,\hat{y}}$			.815	.801	.821	.821
	$R^2_{\varepsilon}$			.270	.227	.281	.281
	Deviance		465378.0	457053.5	458981.5	456154.4	456139.3
	AIC		465384.0	457065.5	458993.5	456166.4	456151.3
	BIC		465404.8	457107.1	459035.2	456208.0	456193.0

table continues



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Table 3 Continued

Fixed effects		Parameter	Model B5	Model B6	Model B7	Model B8	Model B9
			<i>one_sess<sub>ij</sub></i>	<i>weeks<sub>ij</sub></i>	<i>lnweeks<sub>ij</sub></i>	<i>sqrtweeks<sub>ij</sub></i>	<i>one_week<sub>ij</sub></i>
Initial status, $\pi_{0i}$	Intercept	$\gamma_{0c}$	56.916*** (0.272)	65.700*** (0.246)	69.957*** (0.271)	68.364*** (0.261)	60.394*** (0.243)
<b>Rate of change, <math>\pi_{1i}</math></b>	<b>Intercept</b>	$\gamma_{1c}$	<b>14.774***</b> (0.299)	<b>-0.087***</b> (0.002)	<b>-2.637***</b> (0.055)	<b>-1.203***</b> (0.027)	<b>9.783***</b> (0.199)
Variance components							
Level 1	Within-person	$\sigma_{\varepsilon}^2$	138.49*** (0.962)	133.40*** (0.941)	131.02*** (0.912)	126.34*** (0.884)	154.23*** (1.078)
Level 2	In initial status	$\sigma_0^2$	471.66*** (9.088)	413.48*** (7.470)	458.91*** (9.065)	445.81*** (8.400)	407.49*** (7.316)
	In rate of change	$\sigma_1^2$	309.16*** (10.402)	0.016*** (0.001)	12.276*** (0.355)	2.770*** (0.086)	88.826*** (4.889)
	Covariance	$\sigma_{01}$	-162.42*** (7.666)	-0.507*** (0.051)	-28.931*** (1.438)	-11.518*** (0.647)	-56.805*** (4.322)
Pseudo R <sup>2</sup> statistics and goodness-of-fit							
	$R_{y,\hat{y}}^2$		.803	.808	.816	.822	.774
	$R_{\varepsilon}^2$		.213	.242	.255	.282	.124
	Deviance		458868.2	458791.0	457467.0	456647.2	461638.2
	AIC		458880.2	458803.0	457479.0	456659.2	461650.2
	BIC		458921.9	458844.7	457520.7	456700.9	461691.8

~  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note. Using SAS PROC MIXED, estimation METHOD=ML, covariance structure TYPE=UN.

The fixed effects for Model B1 differed from those of Model A, not only numerically (67.2 versus 62.8 respectively) but also because they represented different parameters. Fixed effects for Model B1 represented initial status while fixed effects for Model A represent the mean of all the scores. The within-person residual variance,  $\sigma_{\epsilon}^2$ , was decreased from 176.0 in Model A to 128.5 in Model B1. This difference is represented by the Pseudo  $R_{\epsilon}^2$  statistic in Equation 1 as follows:

$$\text{Pseudo } R_{\epsilon}^2 = \frac{\sigma_{\epsilon}^2(\text{Model A}) - \sigma_{\epsilon}^2(\text{Model B1})}{\sigma_{\epsilon}^2(\text{Model A})} \quad (1)$$

$$\text{Pseudo } R_{\epsilon}^2 = \frac{175.97 - 128.48}{175.97} = .270.$$

The Pseudo  $R_{\epsilon}^2$  statistic estimates that the variable  $session_{ij}$  accounts for 27% of within-person variability. More importantly, Model B1 produced better fit statistics when compared to Model A (Deviance= 465378.0, AIC= 465384.0, and BIC= 465404.8). This improvement in

#### *Variable Transformation*

The remaining models present in Table 3 are the consequences of the applying the Mosteller and Tukey's (1977) *rule of the bulge* discussed earlier, an initial move down the ladder of powers. Model B2, a model transformed by exponentiation of the sessions data by 1.5, produced goodness-of-fit statistics (Deviance= 458981.5, AIC= 458993.5, and BIC= 459035.2) that are greater than Model B1, indicating a worse model fit. Model

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B3 is a transformation of the sample data that uses a natural log transformation of session number in the variable  $lnsess_{ij}$ . Compared to Model B1 (which uses no transformation), Model B3 achieves improvement in goodness-of-fit statistics by moving up the ladder of powers (Deviance = 456154.4, AIC = 456166.4, BIC = 456153.1). Model B4 represents the results of using a square root transformation of session number ( $sqrtsess_{ij}$ ). This model achieved goodness-of-fit statistics that are the most efficient so far (Deviance = 456139.3, AIC = 456151.3, BIC = 456193.0). Further movement up the ladder of powers resulted in a worsening of model fit. Model B5 is the last data transformation going up the ladder of powers. It uses an inverse transformation of session number ( $one\_sess_{ij} = 1 / [\text{session number} + 1]$ ) and shows a worsening of goodness-of-fit statistics (Deviance = 458868.2, AIC = 458880.2, BIC = 458921.9).

#### *Time Variable for Treatment Dose: Sessions or Weeks.*

Having determined that Model B4 was the most efficient of the models that used *sessions* in the unconditional growth model, Models B6– B9 were tested with *weeks* in treatment as the models variable for time. These models were tested using the same strategy for transformations as described earlier, moving up and down the ladder of powers. None of the goodness-of-fit statistics produced by these models were more efficient than those produced by Model B4. The remainder of this analysis will build upon the unconditional growth model represented by Model B4, which uses a square root transformation of sessions ( $sqrtsess_{ij}$ ) as the baseline for comparison.

*Sample as a Predictor in the Model.*

Table 4 presents the results of adding combinations of covariates in several iterations of the modeling process. A close look at Model C shows significant differences between individual, group, and conjoint therapy. Group therapy produced an average initial OQ score of 62.419 compared to 70.056 for individual therapy and 73.258 conjoint, all significantly different at the  $p < .001$  level. Comparisons between the rates of change for each format of therapy also produced significant differences when individual therapy was used at the base rate [individual -5.337, group -3.562 ( $p < .05$ ), and conjoint 3.569 ( $p < .001$ )]. However, when rates of change for group and conjoint therapy were compared in Model C, the difference between rates of change is only  $-.007$  and not significantly different from zero.

*Average Change Trajectory of Group Therapy*

Model C included a description of the average rate of change for individuals who attended group psychotherapy. This model described the initial OQ scores and the average rate of change of counseling center clients without controlling for the effects of a moderator variable, thus these results are representative of the raw sample data. The average initial OQ score for group therapy was 62.419. The average rate of change for this therapy format is -3.562. Average rate of change represents the average of the slope across points of time. That does not indicate a direct linear slope for time 1 to time 21.

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Table 4

*Results of Adding Predictors to the Multilevel Models for Change*

Fixed effects	Parameter	Model C	Model D	Model E	Model F	Model G	
Initial status, $\pi_{0i}$	<i>individual<sub>i</sub></i>	$\gamma_{0c} = \gamma_{0\epsilon}$	<b>70.056***</b> (0.293)	66.106*** (0.472)	66.017*** (0.469)	66.063*** (0.462)	<b>70.411***</b> (0.184)
	<i>conjoint<sub>i</sub></i>	$\gamma_{01}$	<b>73.258***</b> (0.844)	67.952* (0.900)	68.241** (0.778)		
	<i>group<sub>i</sub></i>	$\gamma_{0\epsilon}$	<b>62.419***</b> (1.930)	59.884** (1.914)	61.4* (1.641)		
	<i>female<sub>i</sub></i>	$\gamma_{0\alpha}$		5.785*** (0.560)	5.825*** (0.559)	5.882*** (0.560)	0.552** (0.206)
	<i>ctotse<sub>ij</sub></i>	$\gamma_{0\epsilon}$		0.266*** (0.051)	0.258*** (0.050)	0.310*** (0.047)	-0.065*** (0.018)
	<i>nonuscit<sub>i</sub></i>	$\gamma_{0\epsilon}$		7.359*** (1.071)	7.391*** (1.070)	7.341*** (1.071)	
	<i>cinitial<sub>i</sub></i>	$\gamma_{0\epsilon}$					0.972*** (0.005)
	Rate of change, $\pi_{1i}$ ( <i>SQRTSESS<sub>ij</sub></i> )	<i>individual<sub>i</sub></i>	$\gamma_{1c} = \gamma_{1\epsilon}$	<b>-5.337***</b> (0.114)	-6.014*** (0.196)	-5.949*** (0.192)	-5.944*** (0.192)
<i>conjoint<sub>i</sub></i>		$\gamma_{11}$	<b>-3.569***</b> (0.279)	-5.768 0.289			<b>-6.030*</b> (0.258)
<i>group<sub>i</sub></i>		$\gamma_{1\epsilon}$	<b>-3.562*</b> (0.748)	-4.822 0.731			<b>-6.098</b> (0.605)
<i>age<sub>i</sub></i>		$\gamma_{14}$		0.076*** (0.023)	0.075** (0.023)	0.074** (0.023)	0.070** (0.021)
<i>female<sub>i</sub></i>		$\gamma_{1\epsilon}$		-1.052*** (0.213)	-1.084*** (0.212)	-1.085*** (0.212)	

table continues

Table 4 Continued

Fixed effects		Parameter	Model C	Model D	Model E	Model F	Model G	
Rate of change,	<i>ctotsess<sub>i</sub></i>	$\gamma_{1\epsilon}$		0.266*** (0.017)	0.270*** (0.016)	0.268*** (0.016)	0.296*** (0.017)	
	<i>nosusbir<sub>i</sub></i>	$\gamma_{1\tau}$		-0.971*** (0.186)	0.973*** (0.186)	0.963*** (0.186)	1.036*** (.0173)	
	<i>nonscit<sub>i</sub></i>	$\gamma_{1\delta}$		-1.791*** (0.416)	-1.813*** (0.416)	-1.816*** (0.416)		
	<i>cinitial<sub>i</sub></i>	$\gamma_{1\varsigma}$					-0.151*** (0.004)	
	Intercept	$\gamma_{2\epsilon}$		6.850*** (1.108)	6.856*** (1.108)	4.846*** (0.520)	4.104*** (0.447)	
	Intercept	$\gamma_{3\epsilon}$		-1.511* (0.646)	-1.515* (0.646)			
	Rate of change, $\pi_{2i}$ ( <i>sesscod<sub>ij</sub></i> )	Intercept	$\gamma_{4\epsilon}$		-0.649* (0.318)	-0.652* (0.318)		
	Rate of change, $\pi_{3i}$ ( <i>sesshous<sub>ij</sub></i> )							
	Rate of change, $\pi_{4i}$ ( <i>sesscod<sub>ij</sub> × sqrtsess<sub>ij</sub></i> )	Within-person	$\sigma_{\epsilon}^2$	126.44*** (0.880)	126.31*** (0.879)	126.32*** (0.879)	126.33*** (0.879)	120.24*** (0.805)
	Variance components							
Level 1	Within-person	$\sigma_{\epsilon}^2$	126.44*** (0.880)	126.31*** (0.879)	126.32*** (0.879)	126.33*** (0.879)	120.24*** (0.805)	
Level 2	In initial status	$\sigma_0^2$	462.88*** (9.122)	451.66*** (8.929)	451.70*** (8.930)	452.90*** (8.949)	11.361*** (1.054)	
	In rate of change	$\sigma_1^2$	39.768*** (1.231)	36.354*** (1.162)	36.351*** (1.163)	36.400*** (1.163)	36.163*** (1.130)	
	Covariance	$\sigma_{01}$	-51.263*** (2.655)	-52.203*** (2.573)	-52.234*** (2.574)	-52.372*** (2.577)	2.975*** (0.795)	

table continues

Table 4 Continued

Fixed effects	Model C	Model D	Model E	Model F	Model G
Pseudo R <sup>2</sup> statistics and goodness-of-fit					
Deviance	456023.3	455279.8	455283.0	455309.5	440170.7
AIC	456043.3	455321.8	455321.0	455339.5	440202.7
BIC	456112.7	455467.6	455452.9	455443.7	440313.8
Differences in rate of change between samples					
Conjoint – Group	<b>-0.007</b> (0.782)	-0.946 (0.768)			<b>0.069</b> (0.645)
Conjoint – Individual	<b>1.768***</b> (0.279)	0.246 (0.289)			<b>0.606*</b> (0.258)
Group – Individual	<b>1.775*</b> (0.748)	1.192 (0.731)			<b>0.538</b> (0.605)

~  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note. Using SAS PROC MIXED, estimation METHOD=ML, covariance structure TYPE=UN.

As is evident in Figure 2 there tends to be a steeper rate of recovery in early sessions which flattens out in latter sessions. Figure 2 represent the sessions by session change that can expect during 20 sessions of group psychotherapy as described by Model C.

#### *Average Change with Covariates Added*

An important part of determining the most efficient model was identifying which of the possible covariates had significant effects when added to the model. Covariates were considered individually and in combination. Models C through G were compared using goodness-of-fit statistics to determine the most appropriate combinations of covariates.

*Examining and controlling covariates in the model.* A list of covariates considered for their effects on this study was presented as Table 5. Each was tested individually in the unconditional growth model represented by Model C.

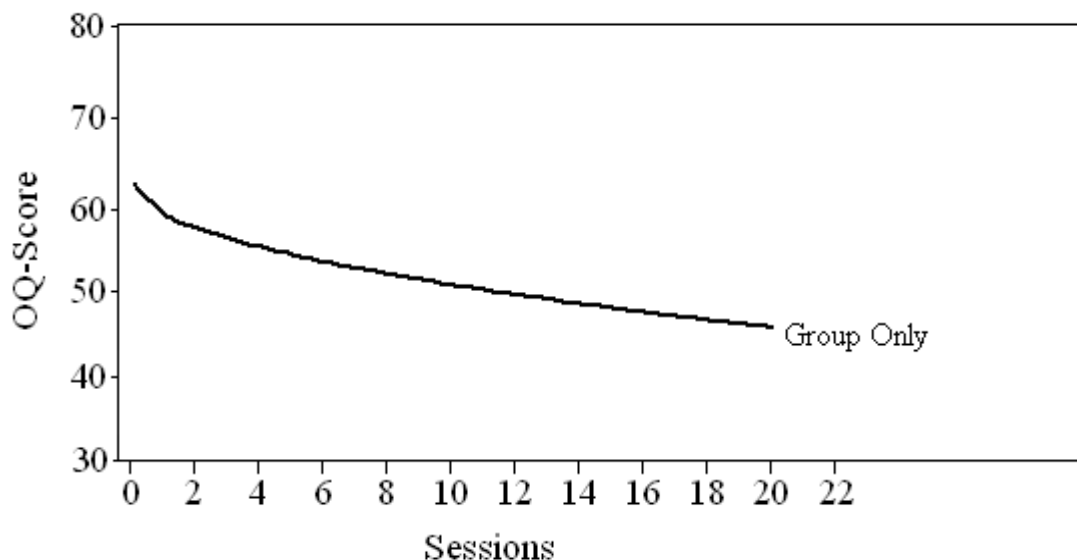


Figure 2. Expected Change Trajectories for Group Only Model C.

Table 5  
Covariates Tested for Significance being Added to Model C

	(marked X if significant)	
	Intercept	Slope
General variables		
Age		X***
Birth country		
Non-US birth	X***	X**
Citizenship		
Non-US citizen	X***	X*
Initial score	X***	X***
Marital status		
Previous treatment		
Religion		
Total number of sessions	X***	X***
Treatment episode number		
Sex	X***	X***
Session number for other treatment types		
Relationship		
Family		
Biofeedback		
Medication	X*	X*
Testing		
Couples	X*	
11 Counselor on Duty (COD)	X***	
Urgent/concern		
PM emergency		
Housing consult		
15 Housing treatment	X*	
Career counseling		

~  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$



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Covariates were preserved for the modeling process if they performed in isolation at a significance level of  $p < .001$  or proved to maintain a significant effect on the model when combined with other variables. Model D in Table 4 shows the results of adding all covariates, except  $c_{initial_i}$ , to the model. Later iterations helped determine the combination of covariates that fit the model the best (Models E- G).

*Improving model fit using covariates.* Model D represents the greatest number of covariates that in combination retain statistical significance in the model. The goodness-of-fit statistics for Model D are an improvement from Model C (Deviance= 455279.8, AIC= 456043.3, BIC= 440313.8). Model E in Table 4 included the same list of covariates as Model D but removed the effects of treatment sample (group, individual, and conjoint) on the rate of change. The parameters that remained in the model were relatively unaffected.

This is not surprising since the effects of treatment sample were non significant in Model D. Though the Deviance score (455283.0) shows slightly worse model fit, the AIC (455321.0) and BIC (455452.9) were decreased, making Model E the better fitting model. Model F in Table 4 presents the results of simplifying Model E (including fewer covariates). Goodness-of-fit statistics for this model provided mixed results, both the deviance (455309.5) and AIC (455339.5) scores increased, while the BIC (455443.7) shows an improvement in fit.

Model G in Table 4 describes the results of fitting a model that includes the effects of initial score and treatment sample (group, individual, conjoint) while removing any predictors determined to be less useful. The addition of treatment sample and the

removal of other predictors resulted in a combination of variance components that were markedly different from those of other models. Fit statistics for Model G improved considerably (Deviance= 440170.7, AIC= 440202.7, BIC= 440313.8). Additionally, this step reduced the variance component ( $\sigma_0^2$ ) from 452 in Model D to 11 in Model G. The covariance between initial score and rate of change ( $\sigma_{01}$ ) also experienced a reduction from -52 in Model D to 3 in Model G. The improvements made in this model provided the best fit and therefore the best argument for the use of Model G and the appropriate model to compare treatment formats.

*Finding the most efficient covariate combination.* A more in depth look at Model G revealed several interesting findings. Male participants who attend an average number of sessions had an average initial score of 70.4. Females were likely to have higher initial scores, while those who attended more than the average number of sessions were found to have slightly lower initial scores. Males in the individual sample, who were US citizens, were born in the US, attended an average number of sessions, were of the average age, and whose initial score did not deviate from average had a predicted rate of change of -6.6. As expected, clients who had higher initial scores experienced faster rates of change. Conversely, participants recovered more slowly if they are older than average, attended more sessions, were born outside of the US, and attended more sessions of COD treatment.

Model G found no differences between rates of change between individual and group or between group and conjoint formats. However, in this model a significant difference was detected between the conjoint and individual samples. In this case, the rate of change for conjoint sample was -6.030 points compared to -6.636 points for those in

individual therapy. Figure 3 presents a visual representation of the change trajectories of the individual and conjoint samples described in Model G. A trajectory of group therapy is not included because of its statistical equivalence to the trajectory of individual and the conjoint therapy samples.

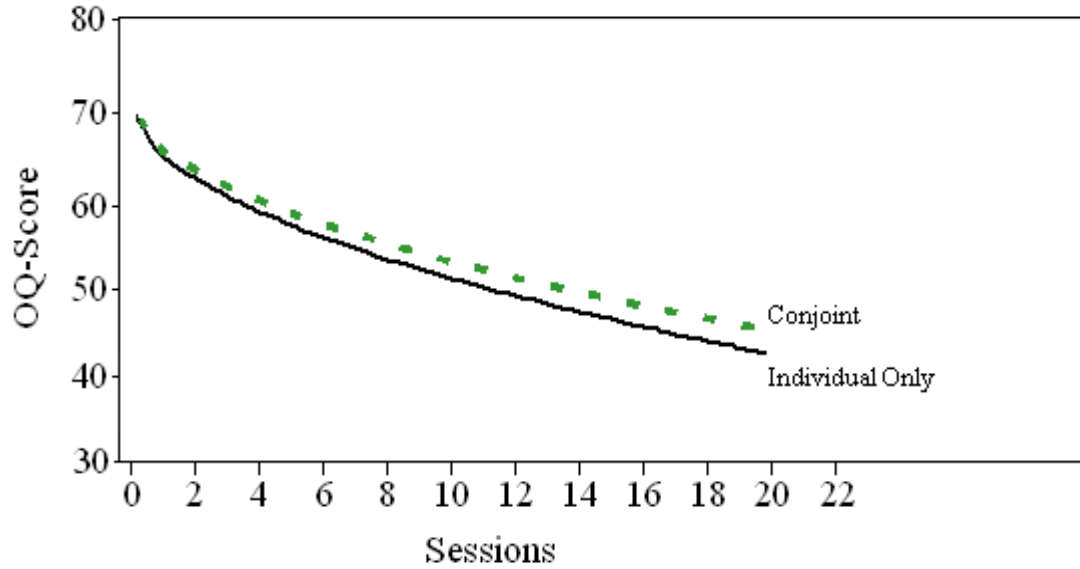


Figure 3. Expected Change Trajectories per Sample Model D.

## DISCUSSION

By creating models to describe the sample data and comparing three of the most common formats of psychotherapy, this study has provided valuable information about 1) the normal course of group therapy and 2) the comparative effectiveness of group, individual, and conjoint formats of psychotherapy. This study is intended to help guide therapists in their decisions in referral practices and utilization of group therapy and confirm the findings of previous studies. By utilizing hierarchical linear modeling to handle various issues presented by the data, this study has calculated the rate of change trajectory of a group therapy sample and carefully considered whether rates of change in psychotherapy differ by treatment modality.

### *Summary of Results*

The results of this study definitively show that clients who attended therapy demonstrated statistically significant decrease in psychological distress as measured by the OQ-45. Graphing the average rate of change for the group only sample data showed faster initial rates of change that decline as the course of therapy progressed. The results also showed that when controlling for covariates in the model, the group treatment modality does not differ in rate of change when compared to individual or conjoint treatment modalities over a course psychotherapy treatment. However, when the conjoint treatment modality was compared to the individual treatment modality the results were much less clear. Although most of the evidence collected by this study seems to indicate differences are small, rates of change in conjoint treatment modality were slower in a number of model iterations. Overall, the strong overall findings of this study have implications beyond the comparative efficacy of group, individual, and conjoint therapy.

### *Implications of Results*

Some of the most important implications of this study are in how its findings support previous studies and address issues uncovered in a review of the existing literature. In particular, other studies have shown that participants in individual therapy improve the most in the initial stages of therapy. Differences in methodology and analysis techniques made this a challenge but were successful in showing similar patterns of initial recovery. Other challenges presented by the sample data ultimately helped shed light on other salient issues identified by literature. Although, all of the data used in this study was collected at the same site over a number of years, there are several characterological issues presented by the data that add to this discussion. Namely, sample sizes differed greatly as did the average number of sessions attended in a course of therapy. Though the modeling process for this study controlled for a number of participant characteristics when comparing the samples, these issues have implication in referral practices, evaluating the cost effectiveness of treatment, efficacy, and expected rates of recovery.

### *Sample Differences and Referral Practices*

Though the unconditional growth model determined for this study (Model C) showed significant improvements for clients who attended group therapy, it also identified differences between the group, individual, and conjoint therapy samples. Those referred to group psychotherapy had lower OQ-scores at intake, constituted a much smaller group (only 160 compared to over 6000 in the individual sample), and contain decisively more male participants. Low sample population and initial OQ scores could be the result of a lack of confidence by referring therapists. Demographic discrepancies such

as these may imply that referral practices for group therapy were different from other modalities. Additionally, it may be that group therapy formats either attracted more males and/ or received more referrals for men by virtue of their content, increasing the possibility that the group sample was somewhat unique.

*Individual and Conjoint Formats and their Differences*

The results of this study support previous reports that recovery in group and individual therapy formats were essentially the same; however, this study did not validate a claim that conjoint formats of individual and group therapy result in a superior reduction in client distress when compared to these treatments separately (Baehr, 1954). As mentioned earlier, a significant difference between rates of change for individual and conjoint formats was detected; conjoint therapy showing a slower rate of change. Though these differences were often small and may be attributed to variations of covariates used in the model, possible reasons for slower rates of change must be considered. One explanation may be that those who were attending conjoint therapy were more resistant to recovery; as evidenced by the conjoint sample having the highest average initial OQ score (73). Another possible explanation is based on how clients are referred to conjoint therapy.

There does not seem to be a clear protocol for referring clients to conjoint formats of therapy established at the collection site. A review of those who met the inclusion criteria for this study revealed three common patterns for those who attended a combination of group and individual therapy: 1) clients attended both group and individual therapy weekly 2) clients attended group therapy initially, terminated, and then

commenced with individual therapy, and 3) clients attended individual therapy for several weeks (more than two sessions) and then transitioned to group therapy.

It is possible that transitioning between two formats of therapy has a negative effect on outcome. More specifically, it is possible that adjusting to changes in format slows the recovery process. Yalom (1995) describes a “forming stage” apparent in the early development of existential group psychotherapy defined as a period of time when members orient themselves within the group. It is possible that a transition from individual therapy results in a qualitatively different forming stage, as a readjustment to a new therapy format occurs. Similarly, a transition from group to individual therapy may be due to an unadvised referral to group therapy and the client's subsequent disillusionment. In this scenario the therapist is likely to have to spend extra time joining and developing a positive therapeutic contract with the client. Both scenarios could significantly slow rates of recovery.

It is also likely that in some circumstances therapists responded to clients' lack of progress by referring them for additional treatment. It is assumed that these therapists used their understanding of client, group, and individual moderators to design treatments plans individualized to meet the needs of each client. It is possible that the differences between clients' recovery in individual and conjoint formats were the result of moderator variables related to the therapist referral strategies. Future studies are encouraged to consider these factors. Whatever the reasons, slower rates of change in conjoint therapy raise a number of questions that should be considered when making decisions about referral practices.

*Resource Allocation Implications*

Results from an unpublished pilot for this study raised questions about the value of attending both group and individually therapy in a conjoint format. The current study showed that during a single course of conjoint therapy, clients attended an average of 12.7 sessions. This is in contrast to 6.5 and 6.1 visits for group and individual clients, respectively. Though Model G did not show significantly different rates of change for group and individual therapy, the conjoint modality performed significantly worse when compared to the individual modality. This raises questions about how and why conjoint therapy is used and if it is as effective as other formats of psychotherapy. Questioning the wisdom of utilizing conjoint therapy formats in centers where resources are limited. Admittedly, further investigation is warranted to understand how the effects of transitions between therapy format changes, symptom severity, and referral guidelines are being considered in the decision to utilize conjoint formats. Ideally, therapists should be prudent when utilizing conjoint formats of therapy until these moderators are better understood.

*Cost-effectiveness Pressure and Impact*

McRoberts et al. (1998) identified a gap in the research left by a dwindling number of comparative studies. This gap is alarming because of the growing trend to substitute group therapy for individual therapy as a way to cut costs. The results of this study clearly show that outcomes (at least for those attending a maximum of 21 sessions) are not significantly different. Thus, clients who are referred to group treatment are just as likely to recover as those referred to other treatment formats.



Based on these results and the substantial amount of narrative and meta-analytical studies with similar conclusions, it is unlikely that pressure by HMO and managed care to use group therapy to cut costs will decrease in the near future. History has shown that as evidence for the equality of rates of change between group and individual therapy surface, motivation to use group as a cost effective substitute increases (Freed, 2005; McRoberts et al., 1998; Parloff & Dies, 1977; Piper et al., 1984). Careless substitution of group therapy for individual therapy is difficult to justify based solely on outcome equivalency. Demographic difference present in this study should serve a warning not use group therapy indiscriminately. Covariates like therapist characteristics, group moderators, individual characteristics, and differences in theoretical methodology should continue to guide the referral practices of well informed therapists. Therapists should show prudence and base referral practices on the established strengths of group therapy and client characteristics and not as a means to cut costs.

#### *Qualities of Recovery Curves*

One distinct advantage of using HLM to analyze the data was the ability to create and examine important qualities of recovery curves for each of the treatment formats. In order to provide the best model fit and graphical description of the sample data, this study applied Mosteller and Tukey's (1977) *rule of the bulge*. By utilizing a square root transformation of the data, this study confirmed the hypothesis that rates of change were greater in the beginning of therapy and declined overtime. The trajectory representing group therapy (Model C) was similar to ones created previously for clients of individual therapy (Kadera et al., 1996). Another model (Model G) produced recovery trajectories for group, individual, and conjoint formats and showed similar recovery patterns for each.

*Weaknesses of the Study and Future Recommendations*

The uniqueness of the group and conjoint therapy samples proved to be the most meaningful weakness of this study. Demographics and the average initial scores of the group therapy sample are difficult to explain and could limit the studies generalizability. The conjoint sample provided similar challenges and required almost twice the dosage to produce a significantly slower rate of change. Both samples raised questions about moderator variables not included in the model. Though, it is likely that many of these challenges have been overcome by controlling for known confounding variables; future studies should continue to utilize comparative studies to evaluate change trajectories with respect to a variety of moderator variables.

*Conclusion*

It was not surprising that the results of this study showed no significant difference in main effects when comparing group and individual therapy formats. Outcome research in recent years has consistently supported similar findings (Burlingame et al., 2003; Hoag & Burlingame, 1997; McRoberts et al., 1998). However, a history of inconsistent and mixed results has facilitated the need for studies such as this one. As utilization of group therapy becomes more common, it is likely that research validating its effectiveness will be increasingly important. Likewise, unclear conclusions about the efficacy of conjoint treatment formats increase the need for further research into the subject as well.

For those who practice group psychotherapy, empirical findings that support its effectiveness have come as no surprise. Nevertheless, the future of group therapy will be greatly impacted by studies like this one. As the call for empirical validation approaches frenzied proportions, studies that substantiate the effectiveness of group therapy will

likely help stabilize its role among those who practice psychotherapy. In the meantime, group therapy continues to effectively and efficiently serve clients with a variety of symptoms in a multitude of settings. Understanding more about how group therapy performs in specific settings, with specific symptoms, and with considerations to other moderators will prove to be an important part of the future research.

It is unlikely that this will be that last comparative study considering the differential effectiveness of group, individual, and conjoint psychotherapy. It will be important to broaden the understanding of moderator variables, differences in therapeutic styles, severity of symptoms, increased distress levels, referral practices, as well as a richer understanding of conjoint formats. These areas are virtually unexplored, especially with regard to rates of recovery. Only when these factors have been sufficiently explored will we be able to answer questions about interchangeability and equivalence among treatment modalities

This study provided sound evidence that (a) the recovery trajectory created for group therapy showed significant improvement and illustrated that recovery in group therapy occurred more efficiently in the initial stages and slowed over time, (b) group therapy was not significantly different than either individual or conjoint therapy in terms of its recovery curve. This evidence assures therapists that appropriate referrals made to group therapy will result in recovery similar to other therapy types, that referrals who present with a limited time table to group therapy will find effective treatment, and that clients will receive the greatest recovery gains in the first part of therapy. This study fails to reject the null hypothesis that there is no difference in the recovery rates of group and individual. Thus by considering the results of this study, therapists using group and

individual therapy formats can apply them in a variety of contexts and expect positive outcomes.

REFERENCES

- Baehr, G. O. (1954). The comparative effectiveness of individual psychotherapy, group psychotherapy, and a combination of these methods. *Journal of Consulting Psychology, 18*(3), 179-183.
- Baines, L. S., Joseph, J. T., & Jindal, R. M. (2004). Prospective randomized study of individual and group psychotherapy versus controls in recipients of renal transplants. *Kidney International, 65*, 1937-1942.
- Bovasso, G. B., Eaton, W. W., & Armenian, H. K. (1999). The long-term outcomes of mental health treatment in a population-based study. *Journal of Consulting and Clinical Psychology, 67*(4), 529-538.
- Budman, S. H., & Springer, T. (1987). Treatment delay, outcome, and satisfaction in time-limited group and individual psychotherapy. *Professional Psychology: Research and Practice, 18*(6), 647- 649.
- Budman, S. H., Demby, A., Renondo, J. P., Hannan, M., Feldstein, M., Ring, J., et al. (1988). Comparative outcome in time-limited individual and group psychotherapy. *International Journal of Group Psychotherapy, 38*(1), 63-86.
- Burlingame, G. M., & Barlow, S. H. (1996). Outcome and process differences between professional and nonprofessional therapists in time-limited group psychotherapy. *International Journal of Group Psychotherapy, 46*(4), 455-478.
- Burlingame, G. M., & Krogel, J. (2005). Relative efficacy of individual versus group psychotherapy. *International Journal of Group Psychotherapy, 55*(4), 607-611.

- Burlingame, G. M., Fuhriman, A., & Mosier, J. (2003). The differential effectiveness of group psychotherapy: A meta-analytic perspective. *Group Dynamics: Theory, Research, and Practice*, 7(1), 3-12.
- Callahan, J. L., & Hynan, M. T. (2005). Models of psychotherapy outcomes: Are they applicable in training clinics? *Psychological Services*, 2(1), 65-69.
- Cotton, J. M. (1948). Group psychotherapy: An appraisal. In P. H. Hoch (Ed.), *Failures in psychiatric treatment* (pp. 121-128). Oxford, England: Grune & Stratton.
- Courneya, K. S., Friedenreich, C. M., Sela, R. A., Quinney, H. A., Rhodes, R. E., & Handman, M. (2003). The group psychotherapy and home-based physical exercise (Group-Hope) trial in cancer survivors: Physical fitness and quality of life outcomes. *Psycho-Oncology*, 12(4), 357-374.
- Craissati, J., & McClurg, G. (1997). The challenge project: A treatment program evaluation for perpetrators of child sexual abuse. *Child Abuse and Neglect*, 21(7), 637-648.
- Dobkin, P. L., & Da Costa, D. (2000). Group psychotherapy for medical patients. *Psychology, Health and Medicine*, 5(1), 87-96.
- Fairweather, G. W., Simon, R., Gebhard, M. E., Weingarten, E., Holland, J. L., Sanders, R., et al. (1960). Relative effectiveness of psychotherapeutic programs: A multicriteria comparison of four programs for three different patient groups. *Psychological Monographs: General and Applied*, 74(5), 1-26.

- Freed, M. C. (2005). Costs and cost-effectiveness of seasonal affective disorder treatment: Comparing light therapy, group cognitive-behavioral therapy, and their combination. *Dissertation Abstracts International*, 66, 5086-5207. (UMI 3187213)
- Harmon, S. C. (2006). *Enhancing psychotherapy outcome: The use of feedback and clinical support tools*. Unpublished doctoral dissertation, Brigham Young University.
- Himle, J. A. , Rassi, S., Haghightgou, H., Krone, K. P., Nesse, R. M., & Abelson, J. (2001). Group behavioral therapy of obsessive-compulsive disorder: Seven vs. twelve-week outcomes. *Depression and Anxiety*, 13, 161-165.
- Hoag, M. J., & Burlingame, G. M. (1997). Evaluating the effectiveness of child and adolescent group treatment: A meta-analytic review. *Journal of Clinical Child Psychology*, 26(3), 234-246.
- Kadera, S. W., Lambert, M. J., & Andrews, A. A. (1996). How much therapy is really enough? A session-by-session analysis of the psychotherapy dose effect relationship. *Journal of Psychotherapy Practice and Research*, 5(2), 132-151.
- Kivlighan Jr., D. M., & Kivlighan, M. C. (2004). Counselor intentions in individual and group treatment. *Journal of Counseling Psychology*, 51(3), 347-353.
- Kosters, M., Burlingame, G. M., Nachtigall, C., & Strauss, B. (2006). A meta-analytic review of the effectiveness of inpatient group psychotherapy. *Group Dynamics: Theory, Research, and Practice*, 10(2), 146-163.

Lambert, M. J., Morton, J. J., Hatfield, D., Harmon, C., Hamilton, S., Reid, R. C., et al. (2004). Administration and scoring manual for the Outcome Questionnaire-45. Orem, UT: American Professional Credentialing Services.

Lambert, M. J., Whipple, J. L., Hawkins, E. J., Vermeersch, D. A., Nielsen, S. L., & Smart, D. W. (2003). Is it time for clinicians to routinely track patient outcome? : A meta-analysis. *Clinical Psychology: Science and Practice, 10*(3), 288- 301.

Lieberman, M. A., Lakin, M., & Whitaker, D. S. (1968). The group as a unique context for therapy. *Psychotherapy: Theory, Research, and Practice, 5*(1), 29-36.

Liebert, T. W. (2006). Making change visible: The possibilities in assessing mental health counseling outcomes. *Journal of Counseling and Development, 84*(1), 108-113.

Lorentzen, S., & Høglend, P. (2005). Predictors of change after long-term analytic group psychotherapy. *Journal of Clinical Psychology, 61*(12), 1541-1553.

Lorentzen, S., Sexton, H. C., & Høglend, P. (2004). Therapeutic alliance, cohesion and outcome in a long-term analytic group. A preliminary study. *Nordic Journal of Psychiatry, 58*(1), 33-40.

Luborsky, L., Singer, B., & Luborsky, L. (1975). Comparative studies of psychotherapies: Is it true that "Everyone has won and all must have prizes"? *Archive of General Psychiatry, 32*, 995-1008.

Luchins, A. S. (1947). Methods of studying the progress and outcomes of a group psychotherapy program. *Journal of Consulting Psychology, 11*(4), 173-183.



- Lutz, W., Lowry, J., Kopta, S. M., Einstein, D. A., & Howard, K. I. (2001). Prediction of dose-response relations based on patient characteristics. *Journal of Clinical Psychology, 57*(7), 889-900.
- Lutz, W., Martinovich, Z., Howard, K. I., & Leon, S. C. (2002). Outcomes management, expected treatment response, and severity-adjusted provider profiling in outpatient psychotherapy. *Journal of Clinical Psychology, 58*(10), 1291-1304.
- McRoberts, C., Burlingame, G. M., & Hoag, M. J. (1998). Comparative efficacy of individual and group psychotherapy: A meta-analytic perspective. *Group Dynamics: Theory, Research, and Practice, 2*(2), 101-117.
- Meltzoff, J., & Kornreich, M. (1970). *Research in psychotherapy*. New York, NY: Atherton Press.
- Mosteller, F., & Tukey, J. W. (1977). *Data analysis and regression: A second course in statistics*. Reading, MA: Addison-Wesley.
- Nolan, M., Carr, A., O'Flaherty, A., Keary, K., Turner, R., O'Shea, D., et al. (2002). A comparison of two programs for victims of child sexual abuse: A treatment outcome study. *Child Abuse Review, 11*, 103-123.
- Okiishi, J. C. (2000). *Waiting for supershrink: An empirical analysis of therapist effects*. Unpublished doctoral dissertation, Brigham Young University.
- Parloff, M. B., & Dies, R. R. (1977). Group psychotherapy outcome research 1966-1975. *International Journal of Group Psychotherapy, 27*(3), 281-319.

- Pilkonis, P. A., Imber, S. D., Lewis, P., & Rubinsky, P. (1984). A comparative outcome study of individual, group, and conjoint psychotherapy. *Archive of General Psychiatry, 41*, 431-437.
- Piper, W. E., Debbane, E. G., Bienvenu, J. P., & Garant, J. (1984). A comparative study of four forms of psychotherapy. *Journal of Consulting and Clinical Psychology, 52*(2), 268-279.
- Rockwell, W. J., Moorman, J. C., Hawkins, D., & Musante, G. (1976). Individual versus group: Brief treatment outcome in a university mental health service. *Journal of the American College Health Association, 24*(4), 186-190.
- Rosenberg, N. K., & Hougaard, E. (2005). Cognitive-behavioral group treatment of panic disorder and agoraphobia in a psychiatric setting: A naturalistic study of effectiveness. *Nordic Journal of Psychiatry, 59*(3), 198-204.
- Rush, A. J., & Watkins, J. T. (1981). Group versus individual cognitive therapy: A pilot study. *Cognitive Therapy and Research, 5*(1), 95-103.
- Ryan, M., Nitsun, M., Gilbert, L., & Mason, H. (2005). A prospective study of the effectiveness of group and individual psychotherapy for women CSA survivors. *Psychology and Psychotherapy: Theory, Research, and Practice, 78*(4), 465-479.
- Scott, J., & Clare, L. (2003). Do people with dementia benefit from psychological interventions offered on a group basis? *Clinical Psychology and Psychotherapy, 10*(3), 186-196.
- Shechtman, Z., & Pastor, R. (2005). Cognitive-behavioral and humanistic group treatment for children with learning disabilities: A comparison of outcomes and process. *Journal of Counseling Psychology, 52*(3), 322-336.

- Shechtman, Z. (2003). Therapeutic factors and outcomes in group and individual therapy of aggressive boys. *Group Dynamics: Theory, Research, and Practice*, 7(3), 225-237.
- Shechtman, Z., & Ben-David, M. (1999). Individual and group psychotherapy of childhood aggression: A comparison of outcomes and processes. *Group Dynamics: Theory, Research, and Practice*, 3(4), 263-274.
- Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.
- Stoddart, K. P., Burke, L., & Temple, V. (2002). Outcome evaluation of bereavement groups for adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 15(1), 28-35.
- Stotsky, B. A., & Zolik, E. S. (1965). Group psychotherapy with psychotics: 1921-1963: A Review. *International Journal of Group Psychotherapy*, 15, 321-344.
- Toseland, R. W., & Siporin, M. (1986). When to recommend group treatment: a review of the clinical and the research literature. *International Journal of Group Psychotherapy*, 36(2), pp. 171-201.
- Tillitski, C. J. (1990). A meta-analysis of estimated effect sizes for group versus individual versus control treatments. *International Journal of Group Psychotherapy*, 10(2), 215-224.

- Turner-Stokes, L., Erkeller-Yuksel, F., Miles, A., Pincus, T., Shipley, M., Pearce, S. (2003). Outpatient cognitive behavioral pain management programs: A randomized comparison of a group-based multidisciplinary versus an individual therapy model. *Archives of Physical Medicine and Rehabilitation*, 84(6), 781-788.
- Valbak, K. (2001). Good outcome for bulimic patients in long-term group analysis: A single-group study. *European Eating Disorders Review*, 9(1), 19-32.
- Vermeersch, D. A., Lambert, M. J., & Burlingame, G. M. (2000). Outcome Questionnaire: Item sensitivity to change. *Journal of Personality Assessment*, 74(2), 242-261.
- Vermeersch, D. A., Whipple, J. L., Lambert, M. J., Hawkins, E. J., Burchfield, C. M., & Okiishi, J. C. (2004). Outcome questionnaire: Is it sensitive to changes in counseling center clients? *Journal of Counseling Psychology*, 51(1), 38-49.
- Washington, O. G., & Moxley, D. P. (2003). Promising group practices to empower low-income minority women coping with chemical dependency. *American Journal of Orthopsychiatry*, 73(1), 109-116.
- Wiess, R. D., Jaffee, W. B., de Menil, V. P., & Cogley, C. B. (2004). Group therapy for substance use disorders: What do we know? *Harvard Review of Psychiatry*, 12(6), 339-350.
- Wilberg, T., & Karterud, S. (2001). The place of group psychotherapy in the treatment of personality disorders. *Current Opinion in Psychiatry*, 14, 125-129.
- Wise, E. A. (2005). Effectiveness of intensive outpatient programming in private practice: Integrating practice, outcomes, and business. *American Psychologist*, 60(8), 885-895.

Yalom, I. D. (1995). The selection of patients. In *The theory and practice of group psychotherapy* (4th ed.). New York: NY Basic Books.