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Cohesion's Relationship to Outcome in Group
Psychotherapy: A Meta-Analytic Review of
Empirical Research

Jennifer T. Alonso

A dissertation submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

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ABSTRACT

Cohesion's Relationship to Outcome in Group Psychotherapy: A Meta-Analytic Review of Empirical Research

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Doctor of Philosophy

Research has consistently shown group psychotherapy to be an effective form of treatment. Group cohesiveness, the quantity and magnitude of the strength of the bonds within the group, has received considerable attention. This study describes the integration of the cohesion literature using a random effects meta-analysis to ascertain the magnitude of the relationship between cohesion and outcome as well as explore the effect specific group variables have on this association. Studies were included which measured the relationship between groups comprised of at least three members, included both an outcome and cohesion measure convertible to an effect size, and were published in English. 40 published studies, comprised of 3,323 participants, were analyzed and yielded an omnibus effect size of $r = .25$, suggesting a positive, moderate relationship exists between cohesion and outcome. Four group variables (group size, treatment duration, treatment setting, and group focus) and a client variable (age) demonstrated markedly stronger relationships with cohesion. The study also examined the most frequently used cohesion measures and definitions as they relate to their relationship to outcome and frequency of use. Clinical implications for group therapists are identified and future research suggested.

Keywords: cohesion, group psychotherapy, meta-analysis, outcome, group size, treatment duration, treatment location, group focus, age

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DEDICATION

To Daniel, my best friend and greatest supporter. You have been my foundation ever since I have known you and I am so grateful for that. Thank you for supporting my goals and dreams as if they were your own. This dissertation would not be finished without you. I love you!

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**Cohesion's Relationship to Outcome in Group
Psychotherapy: A Meta-Analytic Review of
Empirical Research**

Research has consistently proven group psychotherapy to be an effective form of treatment for a variety of disorders, and is at least as effective when compared to individual therapy (Fuhriman & Burlingame, 1994; McEvoy, 2007; McRoberts, Burlingame & Hoag, 1998; Tasca & Bone, 2007). In addition, group was found to be more efficient than individual therapy and saves the therapist time by allowing them to work with multiple clients at once (Scott & Stradling, 1990). The current age of accountability in psychotherapy places particular emphasis on the necessity of implementing empirically supported treatments, and thus the focus of the literature has now shifted to understanding, tracking and learning how to enhance specific therapeutic group processes.

Researchers have identified a variety of factors which influence the effectiveness of group therapy. Topics range from the characteristics of the group members such as interpersonal style (Piper, Joyce, Rosie & Azim, 1994), to expectations about the usefulness of therapy (Frank & Frank, 1991), to the group size (Yalom & Leszcz, 1995). One particular area which has garnered significant attention since its introduction in the field is the twelve therapeutic factors proposed by Yalom (1971). These factors describe group therapeutic relationship constructs including cohesion, altruism, catharsis, and instillation of hope. One factor which is consistently rated by clients as being most useful and impactful in their group experience is cohesion (Pan & Lin, 2004; Reimer & Mathieu, 2006; Yalom & Leszcz, 2005). Cohesion has been described by some as the “bedrock of group experience” (Butler & Fuhriman, 1983, p. 500) given that cohesion explains the level of connection the group feels towards each other. Findings show that

groups with higher levels of cohesion lead to a stronger commitment to the group or interest in completing group-related tasks (Piper et al., 1994) which subsequently help group members to experience increased levels of symptom reduction because they report receiving more help from the group. Research supporting cohesion's role in group therapy makes it difficult to ignore the field's interest in cohesion (Yalom & Leszcz, 2005).

Despite the vast number of articles available supporting the value of cohesion, conflict still abounds regarding the usefulness of this concept. Some have proclaimed that it is time to "let go of cohesion" due to methodological and theoretical concerns (Hornsey, Dwyer, Oei & Dingle, 2009, p.267). Kivilighan (2008, p. 545) stated that a reason for this conflict could be the "severely fragmented and disconnected" nature of the field which causes confusion about the construct of cohesion. To test this belief, authors reviewed the reference sections of articles published in *Group Dynamics* from 1997 to 2002 (Miles & Kivilighan, 2008 as cited in Kivilighan, 2008). They assumed that if researchers in the same field cited similar studies, the literature would be linked and related. However, they reported there was only a 19% overlap in similarly cited studies, indicating a disconnect between new research and pre-existing findings over the past 50 years. As a result of this discrepancy, it can be surmised that few advances have been made in narrowing down the number of cohesion definitions and measures.

Empirical research has supported the claim that cohesion promotes effective and successful group treatment (Budman et al., 1989; Marmarosh, Holtz & Schottenbauer, 2005), though others have refuted such claims (Woody & Adessky, 2002). In addition to quantitative studies, narrative reviews spanning back several decades have also studied the degree to which cohesion plays a role in group therapy (Burlingame, MacKenzie & Strauss, 2004; Evans & Jarvis, 1980). Threats to the validity of these narrative reviews concern researcher bias which

can weaken results. Thus, an additional way to summarize the previous literature besides using a narrative review is through a meta-analysis.

There are three extant meta-analyses that studied the impact of cohesion. While no analyses have focused on cohesion's affect in group psychotherapy, the three meta-analyses have focused on cohesion's relationship to task performance in non-therapeutic settings (Evans & Dion, 1991; Gully, Devine, & Whitney, 1995; Mullen & Copper, 1994). In these studies, task performance was operationalized by identifying how a non-clinical and community group performed in sporting events or at business gatherings. The included articles focused on effectiveness, productivity and performance in relation to cohesion. Each study produced a positive relationship finding that cohesion improved these non-clinical groups' ability to successfully complete a task. These overall results were promising to this current study as it is similarly hypothesized that high levels of cohesiveness will positively impact the outcome of the group members, which in psychotherapy, is improved mental health.

The first cohesion and task-performance meta-analysis was performed by Evans and Dion (1991) and included 16 published studies and a total of 18 effect sizes. They found the relationship between cohesion and task performance to have a moderately positive relationship ($r = 0.42$). This study demonstrated that the more cohesive a group, the better they would perform on tasks and productivity.

There have been concerns regarding the validity of this study. First, authors acknowledged the limited generalizability of the study given the small number of included studies. Publication bias was also possible given the inclusion of only published studies; however, the authors used Rosenthal's (1984) fail-safe N formula to determine that it was unlikely publication bias negatively impacted their results. Thus, their conclusions were found

to be robust. Another concern with this meta-analysis stated by Mullen et al. (1994) also noted that Evans and Dion's meta-analysis (1991) did include aggregated effect sizes, but rather utilized the largest effect size per study, possibly inflating their results.

Mullen and Copper (1994) conducted a second meta-analysis using 49 published studies which included 66 separate tests of the cohesion and performance relationship. They made a distinction between studies using a correlational and experimental paradigm. In the correlational design the measured performance of group members was correlated with levels of cohesion. In the experimental designs the level of cohesion was experimentally manipulated and high versus low cohesion groups were compared to determine which had better performance outcomes. Authors obtained a statistically significant overall effect size of $r = 0.25$, noting that 92% of the gathered effect sizes yielded a relationship showing higher levels of cohesion related to client improvement. Further results showed that correlational studies were statistically different and had a stronger relationship than experimental paradigm studies. This was also true of natural groups (e.g. military units) that posted stronger correlations than analog groups. The Mullen and Cooper (1994) meta-analysis illustrated that cohesion was stronger with real rather than analog or artificial (group comprised for the sake of completing a research study) groups. It is hoped that because the studies included in this study's meta-analysis are all real groups a strong correlation will be found.

A concern which arose from this second meta-analysis was their aggregation of effect sizes in studies which employed measurement at multiple time intervals. Gully et al. (1995) argued that each study included in this meta-analysis gathered their multiple data points at varying time intervals. When the data for each study was aggregated, the meta-analysis was left

with a variety of effect sizes, none of which likely measured the same time period, thus limiting the helpfulness of the study.

A third meta-analysis was conducted by Gulley et al. (1995) because they believed the cohesion literature had not placed enough emphasis on the potential differences in task interdependence. High task interdependence describes tasks which require frequent contact with group members. It is believed that in these groups, members are more highly affected by cohesion levels versus lower task interdependence groups. The authors proposed that cohesiveness would be less predictive of performance with groups lower in task interdependence. Gulley et al. (1995) included 46 studies and 44 total effect sizes in their final analysis, which yielded a moderate effect size ($r = 0.22$). Ultimately they determined there were differences in the cohesion and performance correlations based on level of task interdependence.

To date the field is void of any meta-analytic data regarding the relationship between cohesion and outcome in therapeutic groups. Given that cohesion is most often described in the context of group therapy outcomes and processes, it seems natural that this be addressed. Through this study, it is hoped that clarity will be gained on the specific role cohesion plays in group therapy. Ultimately the findings should help group leaders identify the level of emphasis this construct should have in their groups.

What follows is a detailed review of the literature which discusses the role of meta-analyses in psychological research and effectiveness of group psychotherapy. A specific therapeutic process, cohesion, which has been found to affect group processes and outcome, is discussed. The history and current state of the cohesion literature is explored, along with current concerns regarding cohesion's utility. Ultimately the purpose of the study is to describe how cohesion has been historically operationalized and measured, assess cohesion's relationship to

client outcome and identify variables which may moderate this relationship, and also conclude with current gaps in the cohesion literature.

Literature Review

Meta-Analysis as an Investigative Method

Meta-analysis is a technique used in the statistical synthesis of many independent studies. The combination of these statistical results allows for the summary of empirical studies, and has the purpose of drawing conclusions based on the patterns identified in the data. Meta-analyses calculate an effect size which describes the direction and strength of a study's findings. Effect sizes provide a common metric between studies to allow for comparison, and are typically converted into a *d* or *r* statistic (Berkeljon & Baldwin, 2009). An average effect size is eventually calculated from all of the studies included in the meta-analysis to determine the general conclusions made by the studies as a whole.

To strengthen the findings located from an effect size, additional information which aids in answering the research questions is gathered from the included studies. This information is similar to survey research and involves a process known as coding. Coding involves the detailed process of combing articles for specific information believed to moderate the studied relationship. A coding manual is comprised of a variety of variables which relate to the study aims and topic of the meta-analysis. Coded variables are believed to provide additional information which will be used in identifying patterns and evaluating the overall impact on the data and effect size. Variables are classified in a variety of domains, such as group, member, leader, or study characteristics, and in this study, are believed to moderate the cohesion-outcome relationship.

Hundreds of meta-analyses have been conducted in a variety of fields, ranging from medical treatments to group psychotherapy (Hoag & Burlingame, 1997; Ried, Frank, Stocks, Fakler & Sullivan, 2008). Researchers are viewing meta-analyses as a more rigorous and quantitative approach compared to narrative reviews (Johnson, Mullen & Salas, 1995). Given several narrative reviews on cohesion have been conducted in the past, it was believed a meta-analysis on cohesion would provide new information to the field (Burlingame et al., 2004; Evans & Jarvis, 1980). Meta-analyses provide an increased possibility for valid and reliable studies as procedures for coding and computing meta-analysis data are explicitly discussed and made public. Replication of meta-analytic data is believed to be easier and less subjective than replicating a narrative review. Skeptics have emerged reporting that meta-analyses allow for “garbage in, garbage out” since methodologically unsound studies are included (Lipsey & Wilson, 2001). While it is important to recognize the critics of this technique, attempts to ensure the quality of the analysis is sound, such as ensuring high inter-rater reliability and assigning non-significant results studies 0.0 effect sizes, were implemented. In addition, being able to assess and acquire information regarding group, leader, member or study variables which may moderate the cohesion and outcome relationship will also prove beneficial. Ultimately, using meta-analytic techniques to provide the group literature with an effective way to succinctly assess the cohesion and outcome relationship was deemed a useful contribution to the field.

History of Group Psychotherapy

There is a lack of certainty on who should be given credit for the first psychotherapy group. By the time Alfred Adler and Jacob Moreno were writing about group therapy, Sigmund Freud had already been meeting weekly with his students in a therapeutic group setting. In addition, Joseph Pratt had held group treatment classes for Tuberculin patients, and Carl Jung

had encouraged his friend Bill Wilson to start Alcoholics Anonymous meetings (Barlow, Fuhriman, & Burlingame, 2004). Groups were also identified during World War II with Foulkes and Bion working with army personnel with neurotic disorders and combat fatigue (Harrison & Clarke, 1992). These “groups” were occurring long before people like Irvin Yalom or Rollo May made group psychotherapy popular. Therefore, group therapy is not a treatment style that was merely created by one individual or was part of a fleeting fad.

Given the push for empirically based therapy protocols, it is imperative that the group psychotherapy field show how their treatments are effective. Even today group therapy has at times been viewed as the “poor man’s” therapy or as being “less than” individual therapy. However, group psychotherapy has been established as a practical and cost-effective mode of treatment, often proving to be equally or even more effective than some individual therapy treatments (Burlingame, Fuhriman and Mosier, 2003; McRoberts et al., 1998). Understanding what contributes to the successful nature of group psychotherapy treatment has led to advances in identifying components of this treatment which may help explain group member changes.

Therapeutic Process in Group Psychotherapy

Given the variety of dynamics which are present in group therapy, a popular model of group therapy exists which helps explain the various dynamics which exist. This model (see Figure 1) was proposed in an effort to clarify elements believed to best explain factors which lead to positive outcomes of group (Burlingame, et al., 2004). These five elements are important because they helped to clarify the different aspects of group therapy. Although these factors are often discussed as separate entities and each describe different aspects of the change process, they are mutually dependent and often interact with a high level of overlap. The factors purported to affect group therapy’s outcome included: patient characteristics, leader

characteristics, structural factors, formal change theory, and small group processes. Each of these factors was identified as potential moderating variables for inclusion in the meta-analysis.

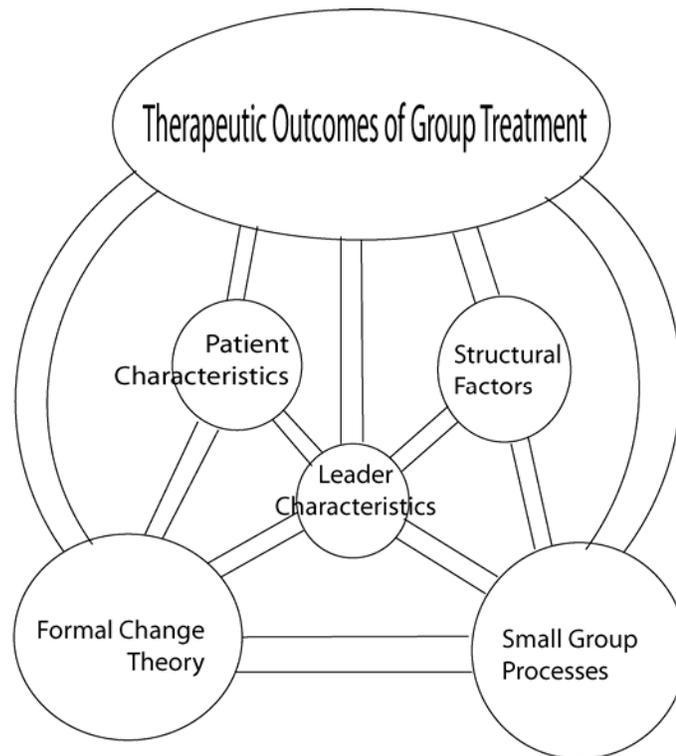


Figure 1. Forces that Govern the Therapeutic Outcomes in Group Therapy

The first factor, patient characteristics include internal and external factors that have been related to successful outcomes in group therapy. Internal factors can include patient motivation, diagnosis, or interpersonal skill level, and external factors can include life changes such as moving, or lack of transportation, which can prevent them from regularly attending group (Burlingame, et al., 2004; Yalom & Leszcz, 2005). Second, the characteristics the group leader possesses can positively influence the processes within the group. Group leaders who show traits such as empathy, acceptance, openness, and warmth, and who model appropriate self

disclosure and feedback, help create a positive therapeutic group culture (Braaten, 1989; Yalom & Leszcz, 2005). Leadership style is also a factor examined, although it is difficult to measure as it often becomes confounded with other interventions occurring within the group (Burlingame et al., 2004).

Third, structural factors within group treatment include the logistics of the group such as frequency and duration of sessions, location, and number of leader and group members. Each play a role in affecting specific group processes (e.g. increasing member interaction) or member outcome (e.g. adding a booster session to increase long-term symptom reduction) (Burlingame et al., 2004; Yalom & Leszcz, 2005). Fourth, formal change theory encompasses specific therapeutic orientations or models (e.g. cognitive behavioral, psychodynamic, interpersonal, or humanistic), and seeks to measure the effectiveness of that orientation with group treatment. Most studies about group psychotherapy test the effectiveness of a formal change theory, and may include a comparison of two or more orientations or treatment manuals (Burlingame et al., 2004; Ogrodniczuk, Piper & Joyce, 2006b).

Fifth, small group processes are empirically supported features unique to group treatment and are found to be related to client outcome. They encompass topics such as group development and therapeutic factors (Burlingame et al., 2004). These therapeutic factors (initially coined curative factors) have emerged in the literature as being helpful in group therapy, and included: altruism, catharsis, development of socializing techniques, existential factors, imitative behavior, imparting information, instillation of hope, interpersonal learning, family reenactment, group cohesiveness, and universality (Yalom & Leszcz, 2005). Each factor describes a different aspect of the therapeutic process which has been found to have a positive

impact on the client and which contributes towards making group therapy an effective mode of treatment (Yalom & Leszcz, 2005).

Elusive Nature of Cohesion

One therapeutic factor, group cohesion, has received considerable attention in the literature for the past 60 years. Debates about what this construct actually measures have been changing causing definitions of cohesion to change. However, certain themes have emerged over time. Cartwright and Zander (1962) and Lewin, Lippett and White (1939, as cited in Dion, 2000) were some of the first to define cohesion, both noting cohesion was a force which acted upon the group members. Others have agreed with that definition further calling cohesion “the resultant forces which are acting on the members to stay in the group” (Festinger, 1950, p. 274; Yalom & Leszcz, 2005), or “basic bond or uniting force” (Piper, Marrache, Lacroix, Richardsen & Jones, 1983, p. 95).

Cohesiveness has also illustrated the interactive and collaborative nature of the group. Yalom & Leszcz (1995, p.55) described it as the “we-ness” of the group, “the connectedness of the group, demonstrated by working together toward a common therapeutic goal” (Budman et al., 1989, p. 341), or “tendency for a group to stick together and remain united in the pursuit of its goals and objectives” (Carron, 1982, p.124). Several authors have also proposed the cohesion describes the individual’s “sense of belonging to a group attraction to the group as a whole” (Frank, 1957, p. 63) and more specifically, the attractiveness of a group for its members (Evans & Jarvis, 1980; Frank, 1957; Ribner, 1974; Roark & Sharah, 1989).

As with any psychological theory, group cohesion has had its critics. Hornsey et al. (2009) further discussed the variable nature of these definitions when they said “cohesion is variously interpreted as interpersonal liking, self-disclosure, tolerance for personal space, caring,

empathy, listening, autonomy, spontaneity, support, trust, group acceptance, emotional well-being, attendance, amount of eye contact among participants, and the length of time that patients engage in a group hug. In short, just about anything that has a positive valence has been interpreted at some point as an index of cohesion” (p.272). Perpetuating the confusion are current researchers who now have avoided the task of defining cohesion, and instead reference several possible cohesion definitions, rather than specifically operationalizing what type of cohesion they believe they are measuring (Taube-Schiff, Suvak, Antony, Bieling & McCabe, 2007).

In an effort to understand the construct of cohesion, specific parallels have been drawn relating cohesion to similar and potentially overlapping constructs. Cohesion is most frequently linked to individual therapy’s measure of relationship, the therapeutic alliance. Both alliance and cohesion seem to describe the strength of the connection between the client and therapist, and are found to be highly correlated with each other (Gillaspy, Wright, Campbell, Stokes & Adinoff, 2002; Joyce, Piper & Ogrondziczuk, 2007; Marziali, Monroe-Blum & McCleary, 1997; Yalom & Leszcz, 2005). Others note that while cohesion does overlap with therapeutic alliance it is also its own distinct construct (Taft, Murphy, King, Musser & DeDeyn, 2003). Marziali et al. (1997) found that despite the correlation between alliance and cohesion, additional outcome variance was explained when the variables were separate from each other. The measurement of alliance and cohesion also differed, as group cohesion focused on the member to member relationships, while therapeutic alliance focused on the member to leader relationship. Additional researchers have confirmed the distinction between cohesion and alliance as distinct processes (Bakali, Baldwin & Lorentzen, 2009).

Cohesion Operationalized Multidimensionally

Given it appears many in the literature view cohesion as a distinct construct, efforts have been made to better understand cohesion. While multiple definitions of cohesion do exist, it was believed that this construct may be better understood, and perhaps a single definition decided upon, if cohesion were viewed as a multidimensional construct. Dion (2000) noted that cohesion “means different things for different groups with different goals and tasks” (p. 22). This supports the idea that perhaps cohesion definitions vary so much because their conceptualization changes based on where, how, and when they were measured. Thus, many definitions of cohesion could be accurate, and a multidimensional definition of cohesion could best integrate the field’s definitions over the past few decades. Given that cohesion has been studied within varying fields (psychology, sociology) and with different group populations (athletics, military, business, college dorms) (Griffith, 1988; Slevin & Hagstrom, 1963), it is likely that a multidimensional approach could be helpful.

Various studies have tried to identify how cohesion is best understood in a group therapy setting, and individuals have found that cohesion can load onto as few as two factors (Griffith, 1988; Selvin & Hagstrom, 1963) and as many as five (Braaten, 1991; Cattell & Wispe, 1948). Braaten (1991) created a five factor model illustrating the multidimensional definitions of cohesion after a thorough review of the preceding 30 years of research. The first factor is self-disclosure and feedback, and describes the act of allowing oneself to be vulnerable with the group by sharing personal material or reactions in an effort to increase authenticity, openness and universality. It also allows for members to give and receive interpersonal feedback which may act as a challenge or confrontation, or an act of support.

The second factor is attraction and bonding. This explains the feeling of attachment, belongingness and connection within the group. Attraction describes the short-term relationship within the group while bonding focuses on the feelings of a long-term commitment. Overall, Braaten (1991) notes most consider this factor to be the “most common force acting on participants to remain in the group” (p. 44).

The third factor of cohesion is listening and empathy. This illustrates how the act of carefully listening and focusing on another group member, and trying to understand their experience, is a way to show support and concern for others. It also helps improve one’s own self.

The fourth factor, process performance and goal attainment, describe how group members join group in an effort to reduce psychological symptoms and improve interpersonal skills. They recognize these goals are addressed through group interactions which increase the value of the group process and experience, and give members the opportunity to practice new behaviors or reactions.

The final factor is support and caring. It shows how the group takes on the role of being a secure and affectionate place where members can receive approval, support, and acceptance. This is believed to be unconditional which acts as a powerful source of safety for the group.

Other multifaceted definitions include: multilevel relationships, vertical and horizontal cohesion, task and social cohesion, belongingness and morale cohesion, and personal and social attraction (Burlingame, Fuhriman & Johnson, 2002; Dion, 2000; Griffiths, 1988). There is sufficient evidence to support three of these definitions, and they will be discussed below:

Multilevel cohesion. Burlingame et al. (2002) hypothesized that cohesion is the therapeutic relationship in group, and within the construct of cohesion, multilevel relationships

exist, namely: member-to-member, member-to-group, member-to-leader, leader-to-leader, and leader-to-group. Each represents a separate degree of bond an individual may feel towards a particular group member, leader, or the group as a whole. Thus, cohesion can occur interpersonally, intrapersonally, and intragroup. Specifically, interpersonal focused relationships describe how members interact and feel connected with each other on an individual level. It depicts the level of attachment and support they feel from specific members within the group. On the other hand, intrapersonal aspects of cohesion focus on a member's bond to the group as a whole. It captures how committed they are to the group, and how strongly the group member feels they fit in and are accepted in the group (Yalom & Leszcz, 1995). Intragroup aspects focus on how the group as a whole feels towards each other. Working on mutual goals, feeling sustained by each other, and the safety they feel in the group comprise this type of cohesion (Yalom & Leszcz, 1995).

Vertical and horizontal cohesion. Bliese and Halverson (1996) were the first to discuss Vertical and Horizontal cohesion. As they studied military units, they found high levels of agreement among individuals within the same units. Further study allowed them to confirm their findings through factor analysis and label these as two aspects of cohesion. Vertical cohesion refers to a group member's perception of the group leader. Leaders were viewed on their ability to create cohesion within the group, and their overall aptitude and thoughtfulness. Vertical cohesion is noted to be similar to the member-to-leader relationship that Burlingame et al. (2002) describe. Horizontal cohesion describes the relationship with the group as a whole and focuses on the interpersonal relationships the unit members have together. It seems most closely related to Braaten's (1991) second cohesion factor, attraction and bonding.

Task and social cohesion. Task and Social Cohesion groups illustrate different definitions of cohesion. Individuals rating a group high in Task Cohesion feel drawn toward the group due to the common bond of completing particular goals together. Their focus is on accomplishing a given task as efficiently and rapidly as possible with the group. Thus, in these groups the members are often homogeneous in their actions which in turn reduce the level of interpersonal exchanges (Tziner, 1982). In Tasks groups it will be more common to hear a member remark that “this group is enjoyable for me because of the things we work on together” (Dion, 2000). Task Cohesion appears related to Braaten’s (1991) fourth factor, process performance and goal attainment.

Those with groups high in Social Cohesion enjoy the group membership because of the interpersonal exchanges the group provides. Building relationships with each other is the primary goal as they focus on supporting each other (e.g. “This is an important social outlet for me”) (Dion, 2000). Thus, those high in Social Cohesion view the tasks engaged in to be means of creating positive social frameworks and mutual relationships (Tziner, 1982). This appears related to Braaten’s (1991) fifth cohesion factor, support and caring. A study which looked at Social Cohesion found that groups with high social cohesiveness were more likely to express emotions with each other, such as hostility or warmth. Group member’s relationships were also more spontaneous and less formal exhibited by frequent laughter and comfortable movement in the room (Pepitone & Reichling, 1955).

Attempts to clarify and capture the complexity of the cohesion construct have emerged through multifaceted definitions. While each definition provides the field with value, Braaten’s (1991) five factor model appears to be the most precise way to capture all possible facets of cohesion in a succinct manner. Thus, it was determined this definition would prove most

effective in categorizing the field's current cohesion definitions and its role will be explained in further detail in the methods section.

Cohesion Measures

Due to the wide variety of definitions used by clinicians and researchers when discussing the concept of cohesion, the question of measurement often arises. This problem of incongruent measures was first identified in the 1950s when cohesion measures did not correlate with each other (Dion, 2000). In a review of the cohesion literature, Burlingame et al. (2002) identified that in a total of 31 studies of cohesion, 23 different assessment measures were used. Current reviews of the literature spanning back decades appear to support Burlingame et al.'s (2002) findings that an enormous number of cohesion measures are currently being used by researchers in the past and present.

In a recent article, Hornsey, Dwyer and Oei (2007) examined ten formal scales purported to measure cohesion. They indicated that it was their belief these scales appeared dissimilar in content, despite claiming to measure the same construct. This problem of instrumentation likely causes researchers to find they are measuring cohesion with scales not actually built to measure cohesion. This may be explained given the belief that cohesion is thought to heavily overlap with so many other therapeutic factors. Hornsey et al. (2007) report that the following constructs have been used to measure cohesion: group acceptance, emotional well-being, self-disclosure, interpersonal liking, and tolerance for personal space.

An additional consideration about cohesion is the fact that it is fluid and greatly fluctuates over a group's course of development (Yalom & Leszcz, 2005). Using a stage-related developmental model, in the forming phases of the group, one expects moderate levels of cohesion, the storming phase lower levels of cohesion, and in the performing stage, the highest

levels of cohesion. Depending on when a cohesion measure is administered during the course of the group will likely impact the perceived level of cohesiveness among group members and leaders.

It is thought that if a concrete definition of cohesion was decided upon, the field would be able to more accurately measure this construct by finding and deciding upon a gold standard measure to use. This would also simplify the confusion that surrounds comparing varying research studies as each researcher chooses from a myriad of measures (some of which they create themselves) which each have their own set of unique definitions and measurement methods. It is likely the multitude of measures available have decreased the reliability and validity of the cohesion literature as a whole.

An additional concern which decreases the field's unity is regarding problems of respondents. Cohesion measures are typically response inventories and the respondent for each measure may vary from the group member, group leader, or an outside observer. This detail is likely important to the measurement of cohesion based on related research. It has been found that within individual therapy the relationship between the therapist and the client, or the therapeutic alliance, is often believed to be similar to group cohesion. Kivlighan and Lily (1997) described how there is steady support in the literature which show that a client's opinion of the therapeutic relationship is the most closely correlated to client outcome, verses an outside rater or the therapist's view of the relationship. Thus, it may be that cohesion measures in which the client's perceptions are solicited, such as the frequently used Group Atmosphere Scale (Silbergeld, Koenig, Manderscheid, Meeker & Nornung, 1975), may yield the most predictive information. While most measure cohesion quantitatively, some researchers have done so

qualitatively. In one study, the level of cohesiveness was measured by a variety of ways, one being time spent in a group hug (Kirshner, Dies & Brown, 1978).

Cohesion measures differ in that they each measure one or more of the following relationships: member-group, member-member, or member-leader. The Piper et al. (1983) instrument of cohesion is based upon the definition that cohesion is a “basic bond or uniting force” (p. 95). They believed this bond could be present in a variety of relationships, and thus created their measure to be able to capture all three levels of the cohesion relationship: member to member, group, and leader levels. The Group Attitude Scale (Evans & Jarvis, 1986) was created to measure the level of attraction in a group and focused on the member-group relationship. The authors noted that while some researchers have identified similarities between cohesion and attraction in group, they cite others who have found these concepts to be different. Despite this incongruence in the field, they still chose to compare their measure (GAS) to the cohesion subscale of the Group Environment Scale (Moos, 1986). Administering both measures on multiple trials the correlations ranged from 0.33 to 0.72. While the GAS only purported to be a promising instrument for attraction, it has occasionally been used as a measure of cohesion (Hilbert et al., 2007). To sum things up, Piper et al. (1983) shared their concern about construct validity, stating that the cohesion “problem is the difficulty of knowing whether investigators have measured antecedents of cohesion, concomitants, consequences, or the construct of cohesion itself” (p. 94).

Some researchers have turned to questionnaires which measure several group constructs. In order to clarify the assessment of therapeutic group relationship factors, researchers proposed an empirically-based new model of the group relationship, which eventually gave rise to a new, comprehensive measure of the group relationship, the Group Questionnaire (GQ) (Johnson,

Burlingame, Olsen, Davies & Gleave, 2005). Exploratory and confirmatory factor analysis was utilized to identify the relationship between the following measures and their related constructs: Group Climate Questionnaire (GCQ; MacKenzie, 1983), the cohesion scale of the Therapeutic Factors Inventory (TFI; Lese & McNair-Semands, 2000), the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) and Empathy Scale (ES; Burns & Auerbach, 1996). Questions from these measures were also gathered to yield a total of 60 items deemed most psychometrically sound and relevant. They were included in Johnson et al.'s (2005) model which identified a three factor model of group therapeutic relationships, in addition to several structural factors which exist in group.

Johnson et al. (2005) found that three factors comprise the quality of group therapy relationships, namely Positive Bond, Positive Work and Negative Relationship. The first component, Positive Bonding Relationship, represents the individual group member's emotional attachment and sense of affiliation with the other members of the group, including the therapist, and the group-as-a-whole. The second component, Positive Working Relationships, represents the individual member's collaborative engagement in working towards treatment goals with other members, the therapist, and the group-as-a-whole. The final component, Negative Relationship Factors, represents aspects of the group process that may negatively impact member bonds with the other members, group leader, or group-as-a-whole (Johnson et al., 2005). More than simply representing the lack of a strong positive relational bond, the Negative Relationship factor represents the presence of active conflict, tension, and lack of perceived empathy in the group. Several studies have since replicated this finding, confirming the three factor relationship model (Bormann & Strauss, 2007, 2009 as cited in Burlingame, 2010), with others finding slightly different findings. Bakali, Baldwin & Lorentzen (2009) reported a related three factor

relationship structure, though found that Positive Bond and Positive Work were not distinct factors, but rather cohesion and alliance made up these two factors. They also confirmed the presence of the third, Negative Relationship factor (Bakali et al., 2009).

The GQ researchers were also successful in identifying that the quality of the group relationships exist on different levels of relationship structure (Johnson et al., 2005). Specifically, group members have member-member, member-leader, and member-group relationships. The GQ measure has ultimately reproduced the findings of Johnson's three factor model using just 30 items to capture these group relationship qualities and structures (Krogel et al., in press). Utilizing cohesion measures, despite their flaws, has still allowed the group psychotherapy field to assess how cohesiveness impacts clients in group therapy.

Empirical Support for Cohesion

The amount of empirical evidence about cohesion's relationship to a variety of factors continues to grow each year. Below is a brief review of the studies which show the correlations between cohesion's relationship to group outcome, and cohesion's relationship to other group processes.

Cohesion as a predictor of outcome. There are years of consensus demonstrating that a positive relationship exists between cohesion and patient improvement (Taube-Schiff et al., 2007). Several studies have shown that when clients rank order therapeutic factors, cohesiveness consistently is considered one of the most, if not the most important factor in their group experience (Pan & Lin, 2004; Reimer & Mathieu, 2006; Yalom & Leszcz, 2005). Overall, high levels of group cohesion predict a reduction in psychological symptoms. Members who had cohesive groups are more likely to experience higher levels of self esteem, decreased global symptomatology and have more goal attainment (Braaten, 1989; Budman et al., 1989; Tsuschke

& Dies, 1994). Groups of violent men are also less likely to reoffend when strong cohesion is present (Taft et al., 2003). These cohesion-outcome relationships have been found true in both member-to-group and member-to-leader levels (MacKenzie & Tsucshke, 1993; Sexton, 1993). Similarly, low levels of cohesion were related to poorer outcomes in binge eating disorder (Hilbert et al., 2007).

In the literature there are also studies of group therapy which identified no reliable relationship between cohesion and outcome (Cohen & Mannarino, 2000; Oei & Browne, 2006). Hornsey et al. (2009) note that a shallow look at the group literature may initially seem to support cohesion, but that careful study finds cohesion to be less predictive of outcome than is widely believed. The relationship between cohesion and outcome has not consistently been identified with groups comprised of individuals with substance abuse problems (Gillaspy et al., 2002), social phobia (Woody & Adessky, 2002), and complicated bereavement (Kipnes, Piper, & Joyce, 2002). Others have reported mixed findings about the relationship between outcome and cohesion. Crowe and Greyner (2008) found that while cohesion did affect some treatment gains, scores on the Beck Depression Inventory did not correlate with cohesion. Studies have also found cohesion not to correlate with quality of life at baseline, yet did have an effect at the time of posttreatment measurements (van Andel, Erdman, Karsdorp, Appels & Trijsburg, 2003).

Several theories discuss why cohesion is not correlated with outcome. One hypothesis posits that alliance may be a better predictor than cohesion (Marziali et al., 1997). Another theory proposes that cohesion is not directly associated with outcome, but is rather a helpful but not mandatory condition for personal growth. Kipnes et al. (2002) felt similarly as they believed cohesion may act as a mediator, its presence allowing for the occurrence of a more meaningful mechanism of change to affect the group. Researchers have also found that cohesion is higher in

homogeneous group which may hinder heterogeneous groups in even experiencing certain levels of cohesiveness (Palmer, Baker & McGee, 1997). Others believe the poor relationship found may be because many studies do not report purposefully engaging in strategies to specifically increase cohesiveness within their group. This would naturally question the ability the study has to accurately measure and assess the cohesion and outcome relationship (Burlingame & McClendon, 2008). Finally, concerns have been raised regarding the capability of measures to reliably and validly capture cohesive feelings (Palmer et al., 1997). Mixed evidence exists regarding cohesion's relationship with outcome despite group member and leader reports of cohesion's importance in their group experiences.

Cohesion as a predictor of process. Cohesion has proven to be an important therapeutic factor as a predictor of group process. Studies show that high levels of group cohesiveness are related to an overall increase in group performance (Evans & Dion, 1991; Gully, Devine & Whitney, 1995). Correlations have also been found between cohesion and the quality and quantity of self disclosing statements, feedback given to group members (Braaten, 1990; Budman et al., 1989; Tsuschke & Dies, 1994), and member's attendance (Ogrondniczuk, Piper & Joyce, 2006a). Others report that cohesive groups see differences in "attraction and bonding" and "listening and empathy" (Braaten, 1990, p.491). Studies have also shown that positive client improvement is associated with anticipated levels of cohesion depending on the stage of group development the group member is in. Thus, clients feeling high cohesiveness are able to more easily endure conflict during specific group stages than those clients with lower levels of cohesion, ultimately enabling them to experience stronger positive outcomes in the end (MacKenzie, 1994).

Braaten (1990) questioned whether cohesion or processes of treatment (e.g. feedback, self-disclosure) was the true causal factor. Slavin (1993) found that here-and-now disclosures increased group cohesiveness. On the other hand, studies have shown that cohesion was not significantly correlated with self-disclosure (Santarsiero, Baker & McGee, 1995). Santarsiero et al. (1995) believed their results were inconsistent with previous literature because their analog group of college students only participated in two sessions. Given mixed findings exist for the various aspects of the cohesion-process debate, it seems clear that further investigation is necessary to understand the role cohesion plays in affecting or being affected by process variables. For the purpose of this study, it was further determined that first exploring the relationship between cohesion and outcome was believed to provide the most utility to the field given recent concerns regarding the value of the construct. A future meta-analysis examining the relationship between cohesion and process may be warranted.

Statement of the Problem

The literature review has explored the problems that exist within the cohesion literature. Diverse definitions for this construct have existed for over 50 years which has led to a variety of cohesion measures which have been employed when assessing cohesion. Ultimately the group therapy field has found cohesion in some disarray, with authors citing evidence which supports and denies its validity. The impact of the confusion in the field has led to an assortment of studies and critical prose, each which try to understand the elusive nature of this construct. With this in mind, a primary aim of this study is to assist in consolidating and summarizing the current literature. The method in which this will be accomplished is through a meta-analysis.

Meta-analytic techniques are able to efficiently summarize the available literature and provide quantitative information about patterns and beliefs held within the field. To further the

clinical relevance of the study, a number of characteristics will be examined to establish under which specific circumstances cohesion can be viewed as potentially moderating the cohesion and outcome relationship. These were initially derived by the therapeutic outcomes of group treatment model proposed by Burlingame et al. (2004). It is hoped some of the following questions will be answered: Does the frequency in which a group meets or its size relate to the overall effectiveness of the group? Does the group leader's experience level or theoretical orientation affect the effectiveness of the group? Other variables will include the experience of the therapist, client diagnosis and the cohesion measure used.

In addition, given that the Group Questionnaire's (GQ) subscales (Positive Bonding, Positive Working Relationship and Negative Relationship) purports to measure all aspects of group relationships, the cohesion measures used in the meta-analysis will be examined against the GQ and the various relationships in the group (member-member, member-leader, member-group). Effect sizes will be used to quantitatively assess this and help determine what aspects of the group relationship are being measured in the cohesion literature. Learning about the relationship these exact variables may play will provide group therapists with more clinically relevant information which can aid them in choosing interventions which will promote the most positive therapeutic benefits in their groups.

Hypotheses

Based on the presented literature review, it is hypothesized that in this study:

1. Group cohesion will be positively correlated with measures of outcome. An increase in perceived levels of cohesion will be related to an increase in client outcome (e.g. decrease in depression symptoms; increase in quality of life).

2. The relationship between cohesion and outcome may be moderated by four separate sets of variables. Specifically, :
 - a. Leader variables (theoretical orientation; single vs. co-leadership; experience level)
 - b. Client variables (gender; primary diagnosis; age)
 - c. Group variables (treatment structure; composition; treatment setting; session length; group size; treatment location; group focus; length of treatment) and
 - d. Study characteristics (publication year; attrition rate; cohesion measure administration frequency, time interval, and cohesion definition; outcome measure; definition of cohesion)
3. Cohesion measures that assess the member-member and member-group relationships, and the Positive Bonding subscale of the Group Questionnaire (GQ) will post higher correlates with outcome.

Methods

Identification of Studies

Articles obtained for the comprehensive literature review were found through several methods including the utilization of the PRISMA statement (Moher, Liberati, Tetzlaff, Altman & the PRISMA Group, 2009). A detailed flow chart outlining the steps taken to identify studies for inclusion in the meta-analysis is shown in Figure 2. An initial computer index search was conducted by searching psychological databases (PsychINFO and MedLine) and Google Scholar for articles published between 1967 and May 2009. A total of 1,506 abstracts were examined from the following database: PsychINFO (1,392) and MedLine (114). Abstracts were identified for possible inclusion by searching for terms indicative of group therapy treatment in which

cohesion and outcome were measured (e.g. group psychotherapy, group therapy, support groups, group counseling, cohesion, group cohesion, cohesiveness and group climate). Studies which appeared to fit the inclusion criteria (see section below) were retrieved and the full text of the study was reviewed, yielding a total of 24 articles which were ultimately included in the final data set. Studies were found by two advanced clinical psychology graduate students and six psychology graduates and undergraduates, although the ultimate decision regarding articles in question were made by the primary researcher.

A similar search was also conducted on the most frequently used cohesion measures. A total of 1,027 abstracts were examined in Google Scholar for the following cohesion measures: Group Environment Scale by Moos (63), Cohesion Questionnaire by Piper (90), Group Climate Questionnaire by MacKenzie (40), Group Atmosphere Scale by Silbergeld (19), Cohesion questionnaire by Shulz (354), and the Gross Cohesion Scale by Lieberman / Yalom (461). A total of 10 articles were ultimately included in the final data set.

To further establish study eligibility the article was obtained and the full text was evaluated by the students listed above, although the ultimate decision regarding articles in question were made by the primary researcher. To acquire additional studies, two other methods were employed. First, the reference sections of obtained articles were reviewed to identify studies which may not have been included in the searched databases. This yielded 42 additional articles which were reviewed for possible inclusion, with six articles eventually being included in the final data set.

Second, to reduce the threat of publication bias, efforts were taken to obtain related unpublished studies or studies that may have been missed in the search. Publication bias is a threat to validity unique to literature reviews, particularly meta-analyses. Publication bias

describes how the majority, if not all, of the studies available for inclusion tend to have statistically significant results. Without significant results, they are usually not published (Berkeljon & Baldwin, 2009). Ultimately, using only the available studies, results from these reviews may be inflated. Unpublished articles were solicited through the Group Psychotherapy online professional discussion list (<http://www.grouppsychotherapy.com>). It was hoped that the location of unpublished studies would reduce publication bias and reduce the skew toward only including significant findings, though no individuals responded. Thus, no unpublished articles were included in the meta-analysis.

Inclusion Criteria

To determine the appropriate variables to code in the study, previously published meta-analysis in group psychotherapy were reviewed (Hoag & Burlingame, 1997; Kusters et al., 2006; McRoberts et al., 1998). The inclusion criteria included: (a) group was comprised of at least three members, (b) groups met for the purpose of counseling, psychotherapy or personal growth, (c) at least one quantitative measure of both cohesion and outcome were used, measuring a statistical association with each other, (d) the data allowed the calculation of effect sizes as weighted correlations, (e) articles were published in English.

As studies were screened using the inclusion criteria, it was found that the majority of studies did not meet criteria “b”. Of these studies, almost all did not include an outcome measure, though a few did not include a cohesion measure. There were also several studies which were eliminated due to criteria “c” given that although a cohesion and outcome measure were included in the study, the study authors did not correlate these constructs, making the calculation of the effect size impossible. Several German studies were excluded because they were not written in English and no German speakers were available to translate the article.

Qualitative and case studies were also eliminated from the meta-analysis because the studies did not allow for the calculation of effect sizes as weighted correlations. We also excluded dissertations so that only peer-reviewed studies which likely met a high degree of methodological rigor were included. Finally, almost all substance abuse articles were removed as these studies primarily measured outcome by reduction in substance use, rather than changes in psychological functioning.

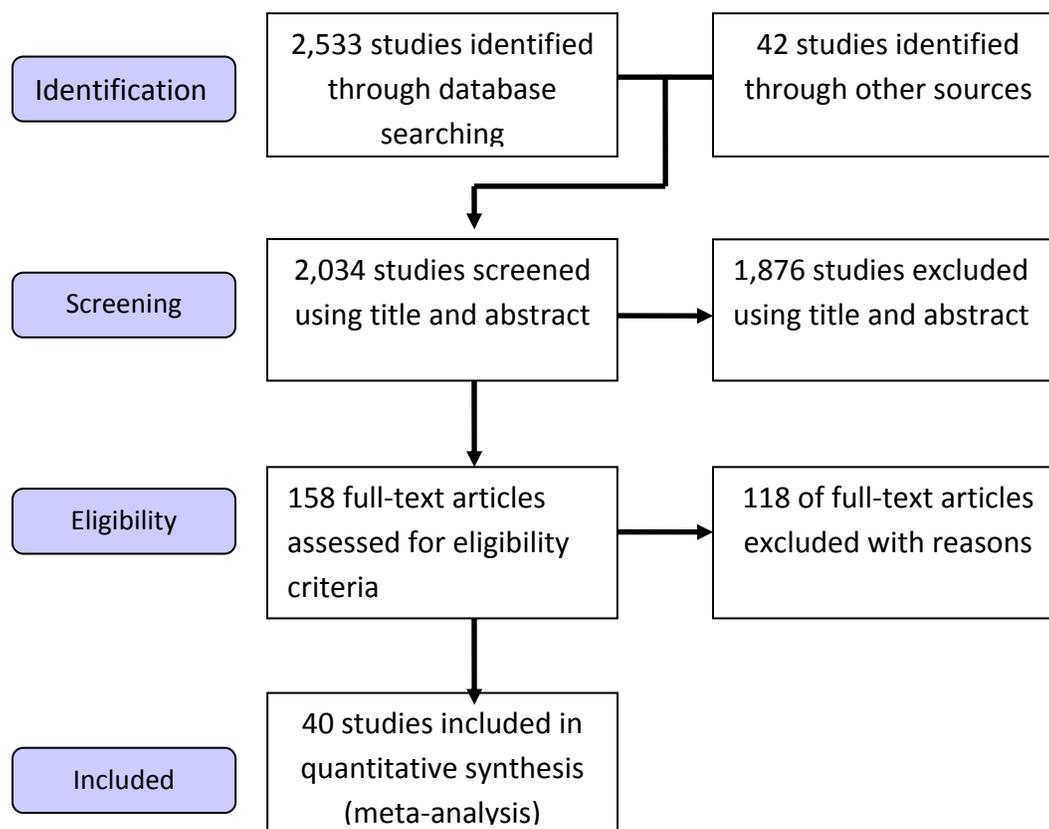


Figure 2. Flow Chart Utilizing the PRISMA Statement.

Data Abstraction / Data Coding

Seven raters (the author and six psychology undergraduate students) coded the articles on a wide range of variables believed to be important in understanding cohesion. Extensive training was conducted with the raters to ensure they understood variables they were coding and the rating system. Information extracted from each article was compromised of objectively verifiable characteristics discussed within the study.

The codebook (see Appendix A) contained variables classified in four content categories: study, leader, member and group characteristics. These variables were picked based on the primary researcher's professional understanding of the group psychotherapy field, reviewing the five factor model proposed by Burlingame et al. (2004) discussed earlier, and by utilizing templates of other group meta-analytic codebooks (Hoag & Burlingame, 1997; Lipsey & Wilson, 2001; McRoberts et al., 1998). We hoped these techniques would help us to include any variables which had been cited in the literature as having had a prior relationship with outcome or believed to be impactful in some way. A detailed write up of each individual code was gathered in the coding manual to allow for successful training of a team of undergraduate coders. In order to determine if any additional variables were missing from the coding manual, a sample of approximately twenty articles were coded by the author. The average article had at least 50% of variables coded, though each article varied in the information they provided. Ultimately, the sample coding exercise aided in creating a more detailed, realistic codebook which better fit the cohesion articles.

Each rater was responsible for independently coding "practice" articles and achieving a level of at least 85% criterion level of agreement before being approved to start coding articles included in the meta-analysis. Upon completing this trial period, raters were grouped in teams of

two to reduce the likelihood of human error in coding the data. Each partnership independently coded the same article before meeting together to reach 100% agreement. It was believed that obtaining complete agreement among coders would increase the validity of the meta-analysis results and reduce researcher bias. This required discussion and clarification about coded variables which they were not in complete agreement about. Discrepancies that arose between the coding teams was resolved by a third party coder (the author) after further scrutiny of the article. In order to further increase the validity of the study, any variables which were not explicitly stated by the study's authors was not coded. It is hoped that this coding strategy would eliminate inferences made, and bias, on the part of the individual coders. To further determine the level of agreement among the coders, each were responsible for coding the same three articles over the course of coding, resulting in high inter-rater reliability (mean Cohen's *kappa* = .73) (Randolph, 2008).

Coding of Cohesion Measures and Definitions

Information regarding the design and subscales of the most frequently used cohesion measures was gathered. Given the variability of cohesion measures used in the field, it was believed that understanding how each cohesion measure defined the construct and then purported to quantify it, would help to further interpret the effect sizes gathered for this meta-analysis. Each cohesion measure was independently analyzed by the principal observer and one undergraduate psychology student to determine what type of group relationship quality and structure it measured. Table 1 provides a sample using how two subscales of the three which comprise the Group Environment Scale (GES; Moos, 1986) map onto group relationship structure and quality.

Table 1

Relationship Structure and Quality of the GES Subscales

Relationship quality	Relationship structure		
	<i>Member-member</i>	<i>Member-leader</i>	<i>Member-group</i>
<i>Positive bond</i>	-	Relationship	Relationship
<i>Positive working relationship</i>	-	-	Personal Growth
<i>Negative relationship</i>	-	-	-

Note. GES = Group Environment Scale. - = Not Applicable.

In order to classify the type of cohesion definition each cohesion measure utilized, definitions were classified using Braaten's (1991) five factor model of cohesion. In addition, each study included in the meta-analysis was examined to determine the way the study's authors' defined cohesion in their article. This was done in an effort to identify if the field's researchers were defining cohesion similarly or not, despite its assumed range in definitions.

Estimation of Effect Sizes

An effect size is a common metric which allows for conclusions to be made across different studies and measures the strength between two variables. The effect size used in this study is the Pearson product-moment correlation coefficient. This value, r , was often reported in many of the studies. When different statistics were reported, the values given were calculated to r . Studies which reported insignificant results and failed to mention the quantitative results were assigned an effect size of 0.00. This was done to prevent artificial inflation of the overall effect size, which can occur when only statistically significant studies are included in meta-analyses (Casey & Berman, 1985). In addition, the direction of each effect size was consistently coded by

the team calculating effect sizes, where a positive value signified a reduction of symptoms as a result of cohesion.

A team comprised of one undergraduate student and one graduate student each independently calculated each study's effect size, decreasing the likelihood for measurement error. In addition, a graduate student and Psychology professor proficient in statistics were also consulted with to ensure the validity of the effect sizes. Currently, it is understood in the field that effect sizes around 0.1 are considered small, 0.3 are moderate and around 0.5 as large (Cohen, 1988).

Frequently, an individual study can contain multiple effect sizes, such as when a particular measure's subscales are individually analyzed, or when multiple cohesion or outcome measures were used. For each relevant statistic given in the study, an individual effect size was calculated. In addition, an aggregate effect size was also calculated based on the methods outlined by Rosenthal (1984) to ensure that each study contributed only one effect size in the final analysis. Without this step, studies reporting numerous values would significantly impact the study's overall effect size, ultimately leading to biased results.

The variability between studies sample size played a role in determining how much a specific study contributed to the overall effect size. Each effect size was weighted by its sample size, with larger N contributing more to the overall effect size than studies with small N . Each study is given a "weight" which was comprised of the inverse of the study's variance. Multiplying the weight and the effect size, and dividing this by the sum of the weights produced the desired effect size per study (Berkeljon & Baldwin, 2009). Thus, each article contributed one weighted, aggregated effect size in the final analysis.

Quantitative Analyses

The effect sizes for the data was combined through the use of the software packages, Comprehensive Meta-Analysis (Biostat Inc., 2008) and Statistical Package for the Social Science (SPSS). To determine whether differences would emerge, a random effects model was utilized to aggregate and analyze the data. To reduce bias among the results, each study only contributed a single effect size to the final analysis, though the effect sizes were weighted by N to ensure each participant had the same amount of influence over the study results. When outlier effect sizes are present they can disproportionately influence the study. Biased statistics emerge as means and variances are distorted, ending in inaccurate findings. Luckily, in this particular study, no outliers were present allowing for all 40 effect sizes to be included within the final analysis.

Random effects modeling was created to help deduce the average effect size from a collection of studies (Hedges & Vevea, 1998). They act as if they were a random sample of a population of effect parameters and estimate its mean and variance. Both fixed and random effects modeling exists, though random effects modeling was used for this study given it assumes that included studies were merely a select sample of all possible studies, unlike a fixed effect model which believes each study is assessing the same outcome (Hedges & Vevea, 1998). Random effects suggests variability occurred because of sampling error, at the subject level (participants are from a population of studies) and study-level (studies gathered from the population of cohesion studies). This modeling type was the recommend choice as it typically produces a more conservative test result and allows for more generalizability of results (Hedges & Vevea, 1998; Lipsey & Wilson, 2001; National Research Council, 1992).

Given the potential risk for publication bias with a meta-analysis, a series of analyses were conducted to determine if this affected the final results in any way. These statistics, namely

the fail safe N, determined the number of studies with a null effect necessary to reduce the overall effect size to a specific level. The “trim and fill” analysis and contour enhanced funnel plot were also analyzed and assessed to check for potential publication bias.

Next, a Q -statistic was calculated to determine the level of homogeneity of the effect size distribution. A Q -statistic indicates if each individual studies effect size accurately estimates the population effect size (Berkeljon & Baldwin, 2009). Similarly, a I^2 statistic estimates heterogeneity in percentages. Larger values indicate higher heterogeneity, with 0% showing no observed heterogeneity, 25% low, 50% moderate and 75% high (Higgins, Thompson, Deeks, Altman, 2003). If heterogeneity is found, variability among the study’s effect size mean is higher than what would be expected from sampling error, indicating true differences exist in the studies correlations. Thus, a heterogeneous effect size allows for a moderator analysis to be considered more confidently (Lipsey & Wilson, 2001).

Afterward, an analysis of variance (ANOVA) was conducted using SPSS macros developed by Lipsey and Wilson (2001). The ANOVA was used to test differences among possible moderator variables to determine if significant differences existed in the effect sizes associated with study characteristics, leader, member and group variables. It also hoped these analyses would aid with understanding situations in which the strength of the effect size varied. This analysis was dependent upon the level of statistical power available for each of the four classes of variables and hoped to provide a more through picture of the cohesion and outcome relationship.

Results

A total of 40 studies, each producing a statically non-redundant effect size, were included within the final analysis. Across these studies, 3,323 participants were included, with 63% of

studies contributing up to 60 participants each (range of participants per study: 12 to 678). Most of the studies were from North America (50%), though there were some representation from Europe (23%), Canada (18%) and Australia (5%). The average age of participants was 36.44 years, and participants were evenly represented across gender (55% female). The location of the groups varied with a majority of study participants in an outpatient group (70%), 15% inpatient, and 15% unknown setting. Participants most frequently (37%) had an Axis I disorder, 35% had an informal diagnosis or minimal pathology (e.g. self esteem problems), or 13% an Axis II disorder. Study characteristics found differences in the theoretical orientations utilized in group treatment, with some studies employing more than one orientation in their treatment protocol. Groups leaders used a variety of theoretical orientations, with 33% of studies using a Cognitive-Behavioral or Behavioral orientation, 25% Psychodynamic, 20% Humanistic, Interpersonal or Supportive, 8% Eclectic and 20% unreported orientation. Additional descriptive information can be found in Table 2.

Omnibus Analyses

The overall random effects weighted average effect size was calculated by including one data point from each of the 40 included studies. Effect sizes ranged from -0.18 to .72 (see Tables 3 and 4) and produced an overall weighted effect size of $r = .25$ ($p < .05$, $SE = .04$) with a 95% confidence interval of $r = .17$ to $r = .32$. This supports the first hypothesis and signifies a moderate relationship between group cohesion and outcome. An index of heterogeneity was calculated to determine the variance in effect sizes. A high level of heterogeneity was found across studies ($I^2 = 82\%$; $Q_{(39)} = 216.8$, $p < 0.00$; $\tau^2 = .06$) indicating variability among the effect sizes is higher than what would be expected from sampling error. Subsequent analyses were

Table 2

Study Characteristics

Variable	%	<i>N</i>
Year of Publication (median)	-	1997.7
Average Number of Sessions	-	23.5
Theoretical Orientation*		
Cognitive-Behavioral / Behavioral	33	13
Psychodynamic / Existential	25	10
Humanistic / Interpersonal / Supportive	20	8
Eclectic	8	3
Unknown	20	8
Primary Diagnosis*		
Informal	35	14
Anxiety disorder	13	5
Mood disorder	18	7
Substance disorder	3	1
Eating disorder	5	2
Personality disorder	13	5
Unknown	18	7
Country		
North America	50	20
Europe	23	9
Canada	18	7
Australia	5	2
Role of Group		
Group is primary treatment	10	4
Part of milieu treatment (e.g. individual, medication)	23	9
Unknown	68	27
Location		
University counseling center	3	1
Clinic or private practice	10	4
Hospital	40	16
Community mental health center	5	2
Classroom setting	10	4
Unknown	33	13
Number of Cohesion Measure Administrations		
Once	10	4
Twice	20	8
Three times	20	8
Four times	0	0
Five or more times	48	19
Unknown	3	1
Type of Outcome Measure*		
General psychological distress	38	15
Depression	30	12
Anxiety	15	6
Quality of Life / General Well Being	20	8
Interpersonal Problems/Relationships	23	9
Self Esteem	13	5
Other	45	18
Unknown	8	3

Note. *Values do not add up to 40 because some studies used multiples.

Table 3

Weighted Average Effect Sizes for the Cohesion-Outcome Relationship

Study	Effect size ^a	Lower limit	Upper limit	z-value	p-value
Antonuccio, Davis, Lewinsohn & Breckenridge (1987)	.00	-.19	.19	0.00	1.00
Beutal et al. (2006)	.23	.06	.39	2.68	.01
Braaten (1989)	.21	.02	.38	2.20	.03
Budman et al. (1989)	.63	.48	.74	6.91	.00
Crowe & Grenyer (2008)	.20	-.06	.60	1.63	.10
Falloon (1981)	.16	-.12	.42	1.12	.26
Flowers, Booraem & Hartman (1981)	.56	.09	.83	2.28	.02
Gillaspy, Wright, Campbell, Stokes & Adinoff (2002)	.19	-.10	.45	1.30	.19
Grabhorn, Kaufhold & Overbeck (2002)	.18	-.11	.44	1.22	.22
Hilbert et al. (2007)	.24	.08	.39	2.84	.00
Hoberman, Lewinsohn & Tilson (1988)	.38	.09	.61	2.50	.01
Hurley (1989)	.70	.64	.75	16.70	.00
Hurley (1997)	.35	.28	.41	9.49	.00
Joyce, Piper & Ogrodniczuk (2007)	.01	-.10	.28	0.92	.36
Kipnes, Piper & Joyce (2002)	.00	-.57	.57	0.00	1.00
Kivlighan & Lilly (1997)	.36	.00	.64	1.96	.05
Levenson & Macgowan (2004)	.33	.09	.54	2.61	.01
Lipman et al. (2007)	.15	-.18	.45	0.89	.37
Lorentzen, Sexton & Hoglend (2004)	.30	-.33	.75	0.93	.35
Mackenzie & Tschuschke (1993)	.46	-.05	.78	1.79	.07
Marmarosh, Holtz & Schottenbauer (2005)	.54	.39	.67	6.01	.00
Marziali, Munroe-Blum & McCleary (1997)	.19	-.32	.62	0.72	.47
May et al. (2008)	.18	.01	.34	2.06	.04
Norton, Hayes & Springer (2008)	.30	.04	.53	2.21	.03
Oei & Browne (2006)	-.04	-.19	.12	-0.51	.61
Ogrodniczuk & Piper (2003)	.22	.03	.39	2.28	.02
Ogrodniczuk, Piper & Joyce (2005)	.22	-.01	.43	1.90	.06
Ogrodniczuk, Piper & Joyce (2006)	.42	.12	.65	2.69	.01
Ratto & Hurley (1995)	.23	-.12	.53	1.28	.20
Rice (2001)	.00	-.26	.26	0.00	1.00
Roether & Peters (1972)	-.18	-.43	.10	-1.26	.21
Rugel & Barry (1990)	.10	-.28	.46	0.50	.62
Ryum, Hagen, Nordahl, Vogel & Stiles (2009)	.15	-.24	.50	0.74	.46
Taft, Murphy, King, Musser & DeDeyn (2003)	.18	-.01	.36	1.86	.06
Taube-Schiff, Suvak, Antony, Bieling & McCabe (2007)	.43	.11	.67	2.56	.01
Tschuschke & Dies (1994)	.72	.35	.90	3.27	.00
Van Andel, Erdman, Karsdorp, Appels & Trijsburg (2003)	.20	-.14	.48	1.15	.25
Woody & Adessky (2002)	.17	-.12	.43	1.15	.25
Wright & Duncan (1986)	.13	-.26	.49	0.64	.52
Yalom, Houts, Zimerberg & Rand (1967)	.11	-.30	.48	0.52	.60

Note. ^a = Positive effect sizes indicate cohesion's correlation with outcome.

Table 4

Additional Effect Size Descriptives for the Cohesion-Outcome Relationship

Study	Unaggregated effect size ^a	Outcome type	Sample size ^b	Sessions ^c
Antonuccio, Davis, Lewinsohn et al. (1987)	.00 .00	DP	106	12
Beutal et al. (2006)	.21 .28	OT	134	8
Braaten (1989)	.60 .17 .18 .23	GD OT	110	NR
Budman et al. (1989)	.66 .7 .53	GD SE OT	90	15
Crowe & Grenyer (2008)	.20*	DP	30	16
Falloon (1981)	.17 .15 .10 .08 .33	AN QL OT	51	10
Flowers, Booraem & Hartman (1981)	.56	OT	16	10
Gillaspy, Wright, Campbell et al. (2002)	.16 .31 .09	DP GD OT	49	9
Grabhorn, Kaufhold & Overbeck (2002)	.18*	GD	48	Three months
Hilbert et al. (2007)	.15 .24 .32 .15	AN GD OT	138	90
Hoberman, Lewinsohn & Tilson (1988)	.38	DP	42	12
Hurley (1989)	.70	UN	374	20
Hurley (1997)	.35	OT	678	19.77
Joyce, Piper & Ogrodniczuk (2007)	.28 .00 .00	GD QL OT	107	12
Kipnes, Piper & Joyce (2002)	.00 .00	DP GD	12	12
Kivlighan & Lilly (1997)	.36	OT	30	20
Levenson & Macgowan (2004)	.32 .34	OT	61	NR
Lipman et al. (2007)	.01 .45 .03 .10	DP SE OT	38	10
Lorentzen, Sexton & Hoglend (2004)	.43 .25	GD IP	12	104
Mackenzie & Tschuschke (1993)	.46*	GD, OT	16	88
Marmarosh, Holtz & Schottenbauer (2005)	.46 .58	DP SE	102	12

Table 4

Additional Effect Size Descriptives for the Cohesion-Outcome Relationship (continued)

Study	Unaggregated effect size ^a	Outcome type	Sample size ^b	Sessions ^c
Marziali, Munroe-Blum & McCleary (1997)	.15	DP	17	30
	.21	GD		
	.20	IP		
	.20	OT		
May et al. (2008)	.18	QL	132	12
Norton, Hayes & Springer (2008)	.30	AN	54	12
Oei & Browne (2006)	-.08	AN	162	8
	.01	DP		
Ogrodniczuk & Piper (2003)	.22*	AN, DP, GD, IP, QL, SE, OT	107	12
Ogrodniczuk, Piper & Joyce (2005)	.22*	AN, DP, GD, IP, QL, SE, OT	75	12
Ogrodniczuk, Piper & Joyce (2006)	.42	IP	39	12
Ratto & Hurley (1995)	.40	DP	33	54
	.24			
	.09	GD		
	.20			
Rice (2001)	.00*	DP, GD, IP, SE, OT	59	12
Roether & Peters (1972)	-.18	OT	51	“Minimum of 10”
Rugel & Barry (1990)	.10	OT	28	12
Ryum, Hagen, Nordahl, Vogel & Stiles (2009)	.27	AN	27	16
	.59	DP		
	.53	GD		
	.42	IP		
	.5	OT		
Taft, Murphy, King, Musser & DeDeyn (2003)	.19	OT	107	16
	.17			
Taube-Schiff, Suvak, Antony, et al. (2007)	.39	AN&DP	34	10
	.45	AN		
	.52	QL		
Tschuschke & Dies (1994)	.72*	GD, OT	16	88
Van Andel, Erdman, Karsdorp, et al. (2003)	.00	QL	38	14
	.26	OT		
	.25			
Woody & Adessky (2002)	.15	AN	48	10
	.07	QL		
Wright & Duncan (1986)	.13	OT	27	12
	.14			
Yalom, Houts, Zimerberg & Rand (1967)	.11	GD	25	Twelve Months

Note. AN = anxiety; DP = depression; GD = general distress; IP = interpersonal problems; QL = quality of life; SE = self esteem, OT = other, UN = unspecified; NR = not reported; * = aggregated

^a = Positive effect sizes indicate cohesion's correlation with outcome. Also, two values in one column indicate two outcome measures were used and two effect sizes gathered. ^b = Participants included in analysis. ^c = exact number of sessions, the average number of sessions if multiple groups were included, or length of time in treatment (if no other values provided).

conducted in order to assess the extent to which measured variables covaried with observed effect sizes.

Publication bias was assessed. A fail-safe N (Begg, 1994) was calculated to determine the fictional value of additional studies needed to render the current results as invalid. This statistic indicated 2,018 studies with null effect sizes (no effect) would be needed for inclusion. Given the initial literature search yielded only 2,533 studies, the likelihood of publication bias is improbable. Second, the “trim and fill” analysis (Duval & Tweedie, 2000a, 2000b) was conducted to estimate the number of studies the meta-analysis likely missed due to publication bias. Results indicated no studies were missed. Finally, the effect sizes and their subsequent sample sizes were put into a contour enhanced funnel plot (Begg, 1994). The data was fairly symmetrical and evenly distributed, particularly at the “base” of the funnel. This confirmed there were no studies missing from the meta-analysis. Thus, publication bias is unlikely to be a threat to the validity of the study.

Examination of Continuous Level Variables

Random effects weighted correlations (Hedges & Vevea, 1998) were conducted for five continuous variables: Study characteristics (year of publication, attrition rate), member variables (percentage of female members, participants average age), and a group variable (exact group size). These variables were examined to determine if they moderated the cohesion-outcome relationship. Thus, random effects weighted correlations were conducted between these variables and the calculated effect size for each study (see Table 5).

Table 5

Weighted Average Effect Sizes across Continuous Variables

Variable	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>
Study characteristics				
Year of publication	.004	.95	.01	40
Attrition rate	.001	.97	.009	25
Member variable				
Percentage of female group members	.02	.89	.03	33
Average age of group member	14.92	.0001*	-.63	27
Group variable				
Group size (exact number of members)	.02	.90	-.03	19

Note. *k* = number of studies

* $p < .001$

Given the four decade span in which cohesion articles were collected, year of publication was studied to determine if an association existed between this and the study outcome. There was no significant relationship between the results obtained and publication year. There were 25 studies which stated the attrition rates within their studied groups but there was no relationship between attrition and the cohesion-outcome effect size.

It was believed that group member characteristics may covary with observed effect sizes. A majority of studies disclosed the gender break down in their groups, but there was no significant association between gender and the cohesion-outcome effect size. Next, 27 studies reported the average age of its group members and results indicate it was strongly correlated ($r = -.63$) with the cohesion-outcome effect sizes. Studies comprised of younger adult group members produced larger effect sizes suggesting that cohesion may be related to outcome at a higher degree with younger adult group members ($Q = 14.92, p < .0001$). Finally, there was no meaningful relationship between the exact number of group members in a group and the cohesion-outcome effect sizes.

Examination of Categorical Level Variables

Nineteen categorical variables were analyzed using a random effects weighted analyses of variance to determine the sum of between-studies variance. Study characteristics included cohesion measure definition of cohesion, frequency of cohesion measure administrations, time intervals of cohesion measure administrations, and cohesion and outcome measures used. Leader variables looked at type of group leadership, leader's experience and theoretical orientation. Member variables included group's gender, diagnosis and type of concurrent treatment. Group variables included structure, composition, session length, treatment length, treatment setting, treatment location, type of group and group size. The Q statistic was used to convey the results, or the sum of between-studies variance accounted for by individual variables. Also, with statistically significant categorical variables, effect sizes will differ for each level of the specific variable.

Several study characteristics were analyzed (see Table 6) to determine if they produced a reliable relationship with the calculated effect sizes. The first comparison focused on the different definitions of cohesion used in the literature by classifying each measure using Braaten's (1991) 5-factor model. Interestingly, 79% of cohesion measures were coded on a single factor in Braaten's model – attraction and bonding. This value increases to 88% though, if studies which included multiple definitions of cohesion were added. Although there was insufficient power to determine if statistically significant differences existed among the different cohesion definitions, descriptive results dispute the field's widely held belief that the cohesion field is in disarray. The use of a common definition shows that the field as a whole may be more unified than had been previously believed. Comparisons were made between the frequencies at which cohesion measures were administered in each study: once, twice, three times, four times,

or five or more times, but these were not related to the study effect sizes. Likewise, the time interval between when the cohesion measures were administered was studied: pre and post, intermittently throughout the study, and only at the beginning, middle, or end of the study and there were no reliable differences found between effect sizes. Finally, the studies which used only one type of outcome measure were not significantly correlated with the calculated effect sizes.

Table 6

Random Effects Weighted Correlations of Study Categorical Variables

<i>Study characteristics</i>	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>	<i>95% CI</i>
Cohesion administration: frequency	4.25	.24			
Once			.2	4	[-.001, .41]
Twice			.21	8	[.05, .37]
Three times			.17	8	[.02, .31]
Four times				0	
Five or more times			.33	19	[.23, .43]
Cohesion administration: time interval	.14	.71			
Pre and post				0	
Intermittent			.25	36	[.17, .33]
Beginning only				0	
Middle only				0	
End only			.2	4	[-.02, .43]
Outcome measures	.88	.99			
Anxiety			.3	1	[-.21, .8]
Depression			.17	3	[-.12, .47]
General distress			.29	3	[-.05, .63]
Interpersonal concerns			.42	1	[-.11, .96]
Other			.21	6	[-.01, .42]
Quality of life			.25	2	[-.11, .6]

Note. *k* = number of studies; CI = confidence interval.

Leader characteristics were correlated (see Table 7) with the effect sizes found herein. Single versus co-leadership was not related to the size of the cohesion-outcome relationship. Similarly, experience level of the group leader(s) and theoretical orientation were not related to the magnitude of the cohesion-outcome relationship.

Table 7

Random Effects Weighted Correlations of Leader Categorical Variables

<i>Leader variable</i>	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>	<i>95% CI</i>
Group leadership	.15	.7			
Single leader			.23	12	[.08, .37]
Co-leadership			.26	16	[.14, .39]
Leadership experience level	.22	.64			
Professionals only			.24	20	[.13, .35]
Students and/or professionals			.28	11	[.14, .42]
Leader's theoretical orientation	1.5	.68			
Cognitive-behavioral / behavioral			.19	11	[.06, .32]
Interpersonal focus ^a			.32	5	[.14, .51]
Psychodynamic			.26	8	[.07, .46]

Note. *k* = number of studies; CI = confidence interval.

^a = interpersonal, humanistic and supportive.

Member characteristics were examined (see Table 8) and there were no effects for mixed gender versus all male groups on the cohesion-outcome relationship. Studies were coded on Axis I (e.g. anxiety or mood disorder), Axis II (e.g. Borderline Personality Disorder), or no formal diagnosis (e.g. low self esteem) and no relationship was found with the cohesion-outcome effect size. Finally, insufficient data was reported among the included studies to determine if concurrent treatment was related to the cohesion-outcome relationship.

Table 8

Random Effects Weighted Correlations of Member Categorical Variables

<i>Member variables</i>	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>	95% CI
Client gender	.43	.51			
Only men			.21	5	[.004, .42]
Mixed gender			.29	30	[.2, .37]
Primary diagnosis	2.56	.28			
Informal			.26	16	[.15, .37]
Axis I			.17	12	[.04, .3]
Axis II			.41	4	[.11, .72]

Note. *k* = number of studies; CI = confidence interval.

Studies were examined (see Table 9) to determine if treatment structure was related to the cohesion-outcome relationship. There were no differences irrespective of whether the group was guided by a treatment manual, theoretical orientation or a naturalistic approach. Group composition was examined with homogenous groups being defined by common diagnoses, presenting problems or treatment focus, and heterogeneous groups defined by dissimilar diagnoses or presenting concerns. There were no reliable differences in the cohesion-outcome relationship by composition or by session length.

The total number of treatment sessions were related to the cohesion-outcome effect sizes ($Q = 6.87, p = .03$). Treatments lasting between 13 and 19 treatment sessions posted the strongest correlation ($r = .36$), followed by treatments lasting 20 or more sessions ($r = .31$). Treatments having 12 or fewer sessions posted the smallest cohesion-outcome relationship ($r = .17$). Also analyzed was whether the size of the group impacted the study outcome, namely a moderately sized group of 5-9 members versus groups that were smaller or larger (<5 or >9 members). Group size was related to the cohesion-outcome relationship ($Q=4.54, p = .03$) with

Table 9

Random Effects Weighted Correlations of Group Categorical Variables

<i>Group variables</i>	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>	<i>95% CI</i>
Treatment structure	.15	.93			
Treatment manual			.24	15	[.11, .36]
Based off of treatment model			.27	15	[.14, .4]
Natural / nothing			.26	4	[.001, .52]
Composition	.07	.78			
Homogeneous			.22	27	[.13, .31]
Heterogeneous			.25	9	[.08, .42]
Group session length	.42	.52			
90 minutes or less			.26	21	[.16, .36]
91 minutes or longer			.2	9	[.06, .35]
Length of treatment	6.87	.03*			
12 or fewer sessions			.31	20	[.09, .26]
13 to 19 sessions			.36	9	[.25, .49]
20 or more sessions			.17	6	[.11, .51]
Group size	4.54	.03*			
5-9 members			.35	12	[.22, .49]
Groups with <5 or >9 members			.16	11	[.03, .28]
Treatment setting	.14	.71			
Inpatient			.29	6	[.07, .51]
Outpatient			.24	27	[.15, .34]
Treatment location	7.67	.02*			
Classroom instruction			.45	5	[.28, .62]
Community mental health providers ^a			.23	9	[.1, .36]
Medical center ^b			.18	18	[.08, .28]
Group focus	4.75	.03*			
Interactive			.38	9	[.24, .51]
Problem specific			.21	29	[.13, .28]

Note. *k* = number of studies; CI = confidence interval.

^a=private practice, community mental health center, university counseling center or community center. ^b=university, general or veterans affairs hospitals. ^c=supportive, interpersonal or humanistic

* $p < .05$.

moderately sized groups posting the largest relationship ($r = .35$) followed by smaller and larger groups ($r = .16$). This is of note given that when the continuous variable of exact group size was examined, no relationship was found.

The location of the group was related to the size of the cohesion-outcome effect sizes ($Q = 7.67, p = .02$). Groups held as part of classroom instruction (e.g. T-group) yielded a stronger association between cohesion and outcome ($r = .45$), followed by outpatients settings (private practice, community mental health center, university counseling center or community center; $r = .23$) and medical centers (including university or veterans affairs hospitals; $r = .18$). While severity of distress may be confound in the above finding, an analysis of inpatient versus outpatient settings did not produce a significant association with the outcome-cohesion relationship.

Finally, the focus of the group was found to be related to the cohesion-outcome relationship ($Q = 4.75, p = .03$). Groups which were interactive or process oriented and thought to have a here-and-now focus yielded higher cohesion-outcome effect sizes ($r = .38$) than problem specific groups ($r = .21$) that did not emphasize member interaction and followed a more structured format.

Rater and Measure Considerations

A total of 18 cohesion measures were used by the studies included in the meta-analysis, however, only seven measures were used more than once (see Table 10). The infrequent use of measures limited the ability to examine whether there were reliable differences in the cohesion-outcome relationship by specific measure. Nonetheless, descriptive differences may prove useful. The four most frequently used measures all had weighted overall effect sizes closely related to the overall meta-analysis average. Interestingly, the only observer-rated cohesion

measure, the GCS, produced double the effect size of the overall study effect size. This is in line with depression research by Cuijpers, Li, Hofmann and Andersson (2010) which illustrated that clinician rated and self reported measures are not always equivalent.

Table 10

Descriptives of Cohesion Measures

Cohesion measures	Times used ^a	Aggregated effect size	Self report ^b
Group Atmosphere Scale (GAS) by Silbergeld et al.(1975)	5	.25	Yes
Group Climate Questionnaire (GCQ) by MacKenzie (1981)	12	.35	Yes
Group Environment Scale (GES) by Moos (1986)	2	.04	Yes
Group/Member/Leader Cohesion scale (GMLCS) by Piper et al. (1983)	5	.15	Yes
Gross Cohesion by Gross and Martin (1952) and revised by Lieberman et al. (1973)	6	.23	Yes
Harvard Community Health Plan Group Cohesiveness Scale (GCS) by Budman et al. (1987)	2	.58	No
Stuttergarter Bogen (SB) by Czogalik and Koeltzow (1987)	3	.35	Yes

Note. ^a= Number of included studies using this measure. ^b = Questionnaire completed by the group member.

Cohesion Measures

Quantitative examination of cohesion measures. The third hypothesis of this study posited that cohesion measures assessing Member-Member and Member-Group relationships of the Positive Bond subscale would post higher correlates with outcome. Unfortunately, the nature of the collected data did not allow for this hypothesis to be tested. Of the three cohesion measures (Group Environment Scale; Gross Cohesion and Group/Member/Leader Cohesion Scale) that measured the Member-Member and Member-Group relationship structures, only total scores were reported by the studies.

The four most frequently used cohesion measures were also assessed to identify whether quantitative differences existed between them. No statistically significant effects were identified when examining the unaggregated or aggregated cohesion measures and their relationship with outcome.

Table 11

Random Effects Unaggregated Correlations of Most Frequently Used Cohesion Measures

<i>Member variables</i>	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>	<i>95% CI</i>
Cohesion measure	2.79	.43			
Group Atmosphere Scale			.22	18	[-.11, .33]
Group Climate Questionnaire			.28	24	[-.2, .36]
Gross Cohesion			.23	12	[-.11, .34]
Group/Member/Leader Cohesion Scale			.17	14	[-.05, .28]

Note. *k* = number of studies; CI = confidence interval.

Table 12

Random Effects Weighted Correlations of Most Frequently Used Cohesion Measures

<i>Member variables</i>	<i>Q</i>	<i>p</i>	<i>r</i>	<i>k</i>	<i>95% CI</i>
Cohesion measure	.86	.84			
Group Atmosphere Scale			.17	3	[-.14, .48]
Group Climate Questionnaire			.31	7	[-.14, .48]
Gross Cohesion			.21	6	[-.01, .42]
Group/Member/Leader Cohesion Scale			.24	4	[-.02, .49]

Note. *k* = number of studies; CI = confidence interval.

Qualitative examination of cohesion measures. While the third hypothesis went unsupported, interesting results emerged from a qualitative examination of the overlap in cohesion measure's content and the GQ's three subscales which comprise group relationships (see Table 13). The GMLCS covered 55% of the group relationship chart, compared to other

measures which ranged from 11 to 44% coverage. The 60 questions which comprise the GMLCS examined Positive Bond in all three relationship levels, as well as the Member-Member aspect of Positive Working Relationship, and the Member-Leader level of Negative Relationship. This measure represented the most comprehensive coverage of both cohesion (as measured by Positive Bond), and overall group relationships (all three subscales), when compared with the other most frequently used cohesion measures.

When examining the other cohesion measures, it was identified that all included aspects of Positive Bond for Member-Group relationships. However, only three cohesion measures assessed Positive Bond using the Member-Member and Member-Leader relationship structures. Cohesion is most often assessed by a member's feelings toward their group as a whole, and few examine feelings towards specific group members or the leader. When Positive Work was examined, only three cohesion measures addressed this content domain and only two cohesion measures examined the Negative Relationship domain. Thus, most cohesion measures focus on a single relationship structure, Member-Group.

Research indicates that the level of cohesion within a group fluctuates as the group changes in its development (Budman et al., 1993; Yalom & Leszcz, 2005). It is believed that groups that are forming will have lower levels of cohesion than those in the work or performing stage. It is also believed that groups in a storming or conflict stage will have lower cohesion. Nearly all (90%) of the studies included in this meta-analysis measured cohesion intermittently throughout the groups making it impossible to test the cohesion-outcome relationship at different stages. Thus, the aggregate study effect size represents the average level of cohesion experienced by a group, rather than stages specific levels of cohesion.

Table 13

Relationship Structure and Quality for Cohesion Measures and their Subscales

Relationship quality	Relationship structure		
	<i>Member-member</i>	<i>Member-leader</i>	<i>Member-group</i>
<i>Positive bond</i>	<ul style="list-style-type: none"> • GMLCS – Positive Qualities & Personal Compatibility • Gross 	<ul style="list-style-type: none"> • GES – Relationship • GMLCS –Positive Qualities & Personal Compatibility • Gross 	<ul style="list-style-type: none"> • GAS – Cohesion / Relationship • GCS • GCQ - Engaged • GES – Relationship • GMLCS – Commitment to Group & Compatibility of Group • Gross • SB – Emotional Relatedness
<i>Positive working relationship</i>	<ul style="list-style-type: none"> • GMLCS – Significance as a Group Member 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • GES – Personal Growth • Gross
<i>Negative relationship</i>	<ul style="list-style-type: none"> • GCQ – Conflict & Avoiding 	<ul style="list-style-type: none"> • GCQ – Avoiding • GMLCS – Dissatisfaction with Leader’s Role 	<ul style="list-style-type: none"> • GCQ – Conflict

Note. GMLCS = Group/Member/Leader Cohesion; Gross = Gross Cohesion; GCQ = Group Climate Questionnaire; GES = Group Environment Scale; GAS = Group Atmosphere Scale; GCS = Harvard Community Health Plan Group Cohesiveness Scale; SB = Stuttergarter Bogen.

Discussion

This meta-analysis was a synthesis of the past forty years of the group psychotherapy literature investigating the relationship between the construct of cohesion and outcome. The

aims of this research study were to estimate the overall magnitude of the association between cohesiveness and outcome, as well as explore the impact of study characteristics, group, member and leader variables as potential moderators of this relationship. The overall random effects weighted effect size of $r = .25$ suggests a moderate but statistically significant relationship exists between group cohesion and client outcome. This result supports the first hypothesis and represents the first of its kind which measured cohesion's association to outcome in a clinical setting. This study is also consistent with the prior meta-analyses about cohesion which identified its positive relationship with task performance in non clinical settings (Evans & Dion, 1991; Gully et al., 1995; Mullen & Copper, 1994). This result is also in line with the trends identified in previous literature which have demonstrated a positive relationship exists between patient improvement and cohesion (Taube-Schiff et al., 2007; Tschuschke & Dies, 1994). It is also important to remember that these results are a conservative estimate because each study only contributed one averaged effect size, and studies which reported nonsignificant data were assigned an effect size of zero. While group therapy researchers have recently wondered about the usefulness of the construct of cohesion (Hornsey et al., 2009), this meta-analysis illustrated a robust positive relationship between cohesion and outcome.

Review of Moderator Variables

Given that this is the first meta-analysis to focus solely on cohesion in clinical populations, a large number of characteristics (study, member, leader and group) were assessed to see how they might moderate the cohesion and outcome relationship. Significant relationships were found in the member and group content domains, though all characteristics will be discussed.

Study characteristics. None of the study variables significantly moderated the relationship between cohesion and outcome. This however does not nullify their influence on the group as suggested by prior research. For instance, cohesion has been closely linked with stages of group development. Tuckman and Jensen (1987) demonstrated that groups change during their time together and coined five stages which groups progress through: forming, storming, norming, performing and adjourning. Given the various phases group members experience, it is natural to infer that cohesion, among other measurable factors, might change over the course of the group. Thus, differences in the cohesion-outcome relationship were expected at different measurement points. This expectation was supported by prior research. Drescher, Burlingame and Fuhriman's review (1985) notes that cohesion levels change in a systematic way during the life of a group. They go on, however, to clarify that it has been difficult to compare cohesion levels across studies. The use of incomparable sampling points (e.g. first and third session) and varying session lengths of group treatments has made it difficult to find aggregate patterns. Finally, a recent study (Johnson et al., 2006) has also identified that not all cohesion questionnaires are equally sensitive to changes in group development, making the task of detecting this relationship even more challenging. Collectively, these factors may have limited our efforts in finding a result in this meta-analysis.

Year of publication did not moderate the cohesion and outcome relationship. While most psychotherapy meta-analyses typically yielded no relationship between outcome and publication year (Powers & Emmelkamp, 2008; Vedel & Emmelkamp, 2008), mixed findings exist. A meta-analysis estimating the effectiveness of group psychotherapy for children and adolescence reported that more recent studies had larger effect sizes (Hoag & Burlingame, 1997). However, a second meta-analysis looking at the same population reported no relationship between effect

size and publication year (Weisz, Donenberg, Han & Weiss, 1995). A final study during the same time frame found the opposite pattern where studies that were published earlier produced greater effect sizes (Martin et al., 1997). Given these mixed findings, it may be that the cumulative effect of the 40 studies included herein cancelled each other out.

Attrition rate did not moderate the cohesion-outcome relationship. Yalom and Leszcz (2005) note that member dropouts are unavoidable and report attrition rates ranging from 17-57% which is comparable to the rates we found (0-55%). The clinical belief for why attrition rates might moderate cohesion and outcome relationship is that premature dropout often lowers group morale, evoke fears of the group's extinction, and produce a "wave phenomenon" which can encourage others to leave the group (Stone, Blaze & Bozzuto, 1980). However, we found no evidence to support this belief in this study.

Member characteristics. Primary diagnosis of group members did not relate to the cohesion and outcome relationship. This finding is similar to short-term individual therapy research where outcome was unrelated to a variety of Axis I and II diagnoses (Propst, Paris & Rosberger, 1994). This effect was surprising given that two recent meta-analyses found different levels of group efficacy/effectiveness by diagnosis. In the first, group treatment of anxiety and mood disorders posted better outcomes than those with mixed, psychosomatic, PTSD and schizophrenic diagnoses (Kosters, Burlingame, Nachtigall & Strauss, 2006). In the second meta-analysis, eating, depression and anxiety disorders posted the three highest effect sizes (Burlingame et al., 2003). Other studies have also found diagnosis to be a good predictor of outcome (Fahy & Russell, 1993; Keijsers, Hoogduin & Schaap, 1994; Macdonald, 1994; Piper et al., 2011). Thus, at this time while diagnosis appears to moderate the level of improvement in group treatment, there is no support for it moderating the cohesion-outcome relationship.

Age did moderate the cohesion and outcome relationship. Younger adult group members posted greater effect sizes suggesting that cohesion is of more importance for younger group members. This finding is consistent with a recent group therapy meta-analysis of geriatric clients which found younger cohorts produced the best outcomes (Payne & Marcus, 2008). Additional studies have reported that younger participants experienced better outcomes (Beutler, Blatt, Alimohamed, Levy & Angtuaco, 2006; Roberts, Blow, Copeland, Barry & Stone, 2000). It is unclear why younger members show greater benefits. It may be that they have an increased willingness for change or that they are at a more malleable developmental life stage. It is also possible that age is partially confounded with the classroom group studies herein that posted the highest effect sizes. Finally, it is important to note that age has not been found to be related to retention or outcome in some studies (Clarkin & Levy, 2003; Macdonald, 1994; Robinson et al., 1990).

While the age-outcome relationship is in line with some previous findings, it is paradoxical to other findings. Specifically, some have reported that younger members attend fewer sessions and have higher attrition rates than older adults (Chang & Saunders, 2002; Ogrodniczuk, Piper, & Joyce, 2006b; Walker & Clarke, 2001). Indeed, Ogrodniczuk and colleagues (2006b) found that older group members in complicated bereavement groups reported feeling less cohesive with younger group members and rated them as less compatible, less significant to the group, and as having fewer positive traits. Yalom & Leszcz (2005) explained that when group members feel dissimilar or isolated from other group members they often dropout. Thus, it may be useful for future research to study members of mixed ages to assess if attrition can be differentiated by age and the degree to which this might produce a differential cohesion-outcome relationship.

Group member gender did not interact with the cohesion and outcome relationship. This finding was unexpected given that several authors reported the disadvantages of mixed-gender groups and endorsed the benefits of same sex groups (Holmes, 2002; Rabinowitz, 2001; Scheinfeld, Rochlen & Buser, 2011). While these studies did not produce empirical evidence to support their claims, they asserted that homogenously gendered groups increased comfort and trust, sense of universality and camaraderie. Other studies found no gender differences for outcome (Robinson et al., 1990), but one did note that men utilized fewer sessions than did women (Thase et al., 1994). Ogrodniczuk, Piper and Joyce's (2004) group psychotherapy study found gender effects with women experiencing greater symptom reduction, and being more committed and compatible to the group than men. Gender effects have also been related to theoretical orientation, with women improving more than men in supportive therapy, and men improving more than women in interpretive therapy groups. However, several studies exist in which no gender effects were found. A comprehensive review of client characteristics in individual and group psychotherapy research and studies of individual therapy all reported gender did not appear to affect outcome (Clarkin & Levy, 2003; Macdonald, 1994; Payne & Marcus, 2008; Zlotnick, Shea, Pilkonis, Elkin & Ryan, 1996). It seems like the next step needed with respect to gender is to experimentally assess this construct. Heretofore gender findings have come from post hoc analyses making them more susceptible to chance relationships. In the absence of such experimental evidence, caution is advised on over- or under-interpreting post hoc findings.

Leader characteristics. The group leader's level of experience did not impact the cohesion and outcome relationship. This finding agrees with what was expected given that the majority of individual and group studies did not find a relationship between therapist experience

and client outcome (Classen et al., 2008; Okiishi, Lambert, Nielsen & Ogles, 2003; Propst, Paris & Rosberger, 1994; Robinson et al., 1990). Even when group studies have experimentally compared leader experience (college professor or “natural helper nonprofessional”) few outcome differences result (Burlingame & Barlow, 1996; Strupp & Hadley, 1979). At first glance, these findings seem startling, however they do align with Lambert and Ogles (2004) observation that common factors (warmth, genuineness, acceptance, feedback, and risk taking) explain a great deal of patient outcomes in comparative trials (Lambert & Ogles, 2004). A striking difference comes in one study of time-limited individual therapy that compared interns with senior staff and found the more experienced therapists producing better client outcomes (Burlingame, Fuhriman, Paul & Ogles, 1989). Though mixed evidence exists regarding therapist level of training, the dominant finding in the literature is that experience has not been linked to outcome which agrees with the findings herein.

Single versus co-leadership was not related to the magnitude of the cohesion and outcome relationship. There were slightly more studies which utilized a co-leadership style, though both produced nearly equivalent effect sizes. Two early group therapy studies provided inconclusive results about how co-therapy behaviors affected outcome in clinical and nonclinical settings (Dies, Mallet & Johnson, 1979; Piper, Doan, Edwards & Jones, 1979). In one, co-leadership produced better group process and outcome (Dies et al., 1979) while the other reported inconsistent gains (Piper et al., 1979). Co-leadership is the preferred method from a clinical perspective (Rollar & Nelson, 1991; Yalom & Leszcz, 2005) but this study provided no evidence to support its effect on the cohesion-outcome relationship.

The theoretical orientation employed by the group leader did not moderate the cohesion and outcome relationship. While mixed findings exist in the literature on this topic, it was

believed CBT would product the highest effects given that two previous group therapy meta-analyses reported superior treatment effects when compared with other orientations (McDermut, Miller & Brown, 2001; Payne & Marcus, 2008). To further add to the surprise, in this meta-analysis, cognitive behavioral group therapy (CBGT) posted the lowest correlations trailing behind interpersonal and psychodynamic orientations. However, a closer look by Yalom and Leszcz (2005) may explain the differences in findings. They report that “CBT therapists were using groups to increase the efficiency of delivering CBT to individual clients, not to tap the unique benefits inherent in the group arena” (p. 513). Studying CBGT protocol aided them in identifying that the emphasis these therapists placed upon structure, didactic learning, homework completion, appeared to detract from here-and-now interactions which purportedly make group so effective. Given that building cohesion requires an emphasis on regular interactions between member’s emotional exchanges between the group, it is predictable that the effects of cohesion on outcome are lowered when the group does not have this focus. This is in line with additional findings in this meta-analysis which support that groups which have an interactive focus post higher correlates with the cohesion-outcome relationship.

The value of cohesion and other group process variables for cognitive-behavioral clinicians have been questioned for years. Fuhriman and Burlingame (1994) note that CBT leaders often used the group as a convenient vehicle to deliver a packaged treatment. More recently, Yalom and Leszcz (2005) report that “CBT therapists were using groups to increase the efficiency of delivering CBT to individual clients, not to tap the unique benefits inherent in the group arena” (p. 513). Indeed, there is evidence in one of the CBT studies herein that posted a negative effect size. In this study, treatment was highly structured which prevented clients from spontaneously sharing their concerns and consequently building increased cohesion (Oei &

Browne, 2006). Given that cohesion building requires an emphasis on interactions between members and emotional exchanges, it is predictable that the effects of cohesion on outcome are lowered when this focus is absent.

In one study (Phipps & Zastowny, 1988) better outcomes were found when leaders were reassuring, focused on member feelings, and interpreted group dynamics. A counter-balancing study found that CBT therapists spoke twice as often as analytically oriented therapists which in turn impacted the groups' communication styles and outcomes (Sandahl, Lindgren & Herlitz, 2000). The importance of group dynamics has been raised in the CBT literature for decades and as Burlingame and McClendon note, as CBT therapists continue in their "valiant and pioneering efforts of incorporating group processes among their CBGT, it is likely the cohesion-outcome relationship will strengthen (p. 135).

Group characteristic. Greater cohesion-outcome effects were observed in groups of five to nine members compared with groups of any other size. This is consistent with past writers who report that this group size produces the highest level of member satisfaction or optimal growth (Castore, 1962; Feters & Peters, 1992; Slater, 1958; Wolman, 1976; Yalom & Leszcz, 2005). Five to eight group members provide the best opportunity for member participation, further allowing clients to connect and build cohesion with the group (Castore, 1962). Research indicates that smaller groups are more likely to avoid disagreement and conflict given the higher potential for alienation from the group (Bales & Borgatta, 1955; Fulkerson, Hawkins & Alden, 1981; Slater, 1958). Thus, in smaller groups, members may avoid interactions they normally would engage in which decreases the benefits they typically may have received. On the other hand, members comprised of group that have ten or more were more likely to feel their opinions were not worth sharing and expressed dissatisfaction with group

discussions (Hare, 1962). It should be noted that there are two studies that have found no relationship between group size and outcome (Burlingame et al., 2003; Robinson et al., 1990) so this finding is not without contradiction in the literature.

Length of treatment was also related to the cohesion-outcome effect sizes. Effect sizes differed across various session lengths, with 13 to 19 sessions yielding the strongest correlations with the cohesion and outcome relationship. There are some that have concluded that treatment needs to last 15 sessions for clinically relevant effects to occur (Hartmann, Herzog & Drinkmann, 1992). The group development literature suggests that it takes time for cohesion to build (Yalom & Leszcz, 2005) within a group and between members. Groups with fewer than 13 sessions may have insufficient time to fully connect. Some researchers have suggested that a simple correlation exists between the number of individual and group sessions and client improvement (Lorentzen & Hoglend, 2004; Propst et al., 1994; Wheeler, Shiflett & Nayak, 2003) while others report no reliable effects between session length and outcome (Payne & Marcus, 2008; Robinson et al., 1990). One reason that may explain the mixed findings are differences in how sessions are spaced. There are undoubtedly other factors at play that might explain the mixed findings but in this study, though our findings suggest that it takes time for cohesion to build to have an optimal effect on client outcome.

Length of the group sessions had no relationship with the correlation between cohesion and outcome. Yalom and Leszcz (2005) write that in the group literature it is commonly believed that groups need to be at least 60 minutes in length in order to allow members to open up and allow exploration of major themes and that groups held longer than two hours become unproductive and cyclical. We may need to wait for experimental manipulation of session length

to determine with confidence its effect on outcome and the cohesion-outcome link rather than rely on post hoc analyses such as ours and others.

Treatment setting did not interact with cohesion and outcome. We expected that outpatient groups might produce stronger effect sizes since they have been shown to have greater overall effectiveness (Burlingame et al., 2003) when compared to inpatient and wait list control groups. If an effect does exist, the unequal sample group (27 outpatient studies, 6 inpatient studies) in this study might hampered our ability to detect it. However, it should be noted that inpatient groups showed a slightly higher cohesion-outcome effect providing no support for our speculation. Our findings suggests that the cohesion-outcome link is an evidence-based principle for both outpatient and inpatient groups.

The location of group (classroom, community mental health or medical center) significantly moderated the cohesion and outcome relationship. Classroom settings posted the largest effect sizes, however, these studies included university students who participated in the group to learn about group therapy processes. Thus, we would expect such groups to place a higher value of cohesion thus improving its link to improvement. It may be that higher functioning group members were able to build stronger connections with other group members rather than focusing solely on their 'problems' thereby maximizing the cohesion-outcome link.

Groups utilizing an interactive focus moderated the cohesion-outcome relationship posting higher effect sizes than group with a problem specific focus. Interactive groups, encouraged members to spontaneously engage and process with each other, focus on the here-and-now and utilize self-disclosure and feedback (Burlingame et al., 2003). This result is supported by findings with complicated bereavement groups (Piper, McCallum, Joyce, Rosie & Ogrodniczuk, 2001) and groups for children and adolescents (Hoag & Burlingame, 1997).

Interactive groups provide more opportunities for clients to connect and build bonds. Similarly, when structured, rule-based exercises are provided, it can encourage “infantizing the group” or cause them to “feel that help (all help) emanates from the leader” (Yalom & Leszcz, 2005, p. 473). However, some client populations fare better when groups do not emphasize interaction, but instead focus on skill building. These may include Borderline Personality Disorder clients in a Dialectical Behavioral Therapy group whose treatment teams may discourage interactions for fear that members who may commit suicide may derail the progress of the surviving group members.

Interestingly, a study of managed care directors suggest that they prefer high structure (problem focused, psychoeducational) groups, whereas providers favored interactive groups (Taylor et al., 2001). This may reflect clinicians “ground-level” knowledge about the effectiveness of interactive groups or at least their preference for their more engaging and interactive environment. Nevertheless, it is important to consider the context of the particular group and population one may be working with weigh the positive and negative consequences of interactive groups.

The degree of treatment structure did not moderate the cohesion and outcome relationship. It was believed that those groups that utilized a treatment manual might have lower effect sizes than the naturalistic groups since the former might allow greater freedom for members to freely intermingle and connect, thereby increasing levels of cohesion. At least one study found support for our speculation (Greenfield, Trucco, McHugh, Lincoln & Gallop, 2007), though other studies were consistent with these results in finding no reliable differences between treatment groups (Robinson et al., 1990; Weisz et al., 1995).

Initially it was believed that no differences among treatment structure was contradictory to the earlier finding that interactively focused groups produced stronger effect sizes. However, further exploration found that several of the manualized protocols included in the meta-analysis utilized interactive elements within their group. For example, one treatment protocol described how members were “encouraged to openly articulate their perceptions and experiences” within the group and how here and now techniques were implemented to help members clarify, confront and interpret their experiences (Beutal et al., 2006, p. 290). Another treatment protocol encouraged group interaction through group discussion, role plays and exercises (Oei & Browne, 2006). Thus, it is believed that the results of the treatment structure were not significant because the effects of utilizing a treatment manual and having interaction in the group may have cancelled each other out.

Group composition was defined by the degree of similarity of presenting problems or diagnosis (homogeneous vs. heterogeneous) and there was no interaction between composition and the cohesion-outcome relationship. Based on previous research (Burlingame et al., 2003; Scheinfeld, Rochlen & Buser, 2011; Yalom & Leszcz, 2005) we hypothesized that homogeneous groups would have a stronger cohesion-outcome relationship but this was not supported herein. Heterogeneous group studies were more difficult to find leading to a 3:1 imbalance favoring homogeneous groups. This may have hampered our ability to detect a moderating effect. On the other hand, the effect sizes for the two types of groups were virtually identical suggesting that cohesion is important in both and thereby questioning the veracity of our prediction. A final explanation maybe how composition was coded. Clarkin and Levy (2003) state that classifying a client by diagnosis is misleading and oversimplifies science. They indicate that there cannot be a truly homogenous sample by grouping people diagnosed with the same disorder because they

often share very few common symptoms and can radically differ in their level of global functioning (e.g. severe, recurrent, suicidal depression verses mild, single episode of depression). This argument seems plausible; diagnosis may simply be too abstract of a construct to capture the individual variability inherent in the group studies under consideration.

Cohesion Definitions and Measures

A comparison of whether the cohesion-outcome relationship systematically varied by the four most frequently used cohesion measures was undoubtedly restricted by sample size; it yielded no reliable differences between measures. However, the Harvard Community Health Plan Group Cohesiveness Scale (GCS) posted the highest effect size (.58) followed by both the Group Climate Questionnaire (GCQ) and Stuttergarter Bogen (SB). It is likely the GCS results were skewed because this measure was only used in two studies, the later of which posted a non-significant effect size (Budman et al., 1989; Kipnes, Piper & Joyce, 2002). The GCS was also the only observer rated measure included in the meta-analysis which also may have impacted the results. Thirty percent of the studies used the GCQ yielding a wide range of effect (0 to .7) and sample sizes (27 to 678). The GCQ included studies comprised of students (Hurley, 1989, 1997; Kivlighan & Lilly, 1997) which undoubtedly inflated its aggregate effect sizes. A different picture emerges with the SB. All of the studies were conducted within a 10 year period and two of the studies (MacKenzie & Tschuschke, 1993; Tschuschke & Dies, 1994) used the same sample size. Interestingly, the study with the largest sample produced the smallest effect size which undoubtedly lowered the aggregate effect size (Grabhorn, Kaufhold & Overbeck, 2002). Finally, the most frequently used definition of cohesion across the majority of measures (88%) was the attraction and bonding domain proposed by Braaten (1991). This illustrated that the

group literature is actually more unified at least from a definition perspective than was previously believed.

Implications for Practice

The moderate relationship ($r = .25$) between group cohesion and client's ratings of outcome did not vary by type of outcome measure (psychological distress, quality of life, interpersonal problems, etc.), setting of care, or diagnosis. Thus, it behooves clinicians working within such parameters to consider specific strategies that create and maintain group cohesiveness. Table 14 illustrates one set of specific strategies from the Group Psychotherapy Intervention Rating Scale (GPIRS; Burlingame, McClendon, Alonso, 2011; Chapman, Baker, Porter, Thayer & Burlingame, 2010) that have been linked to cohesion.

Fostering cohesion may be particularly helpful for those working with young adults, for example those in university college counseling centers. Group therapists can also be mindful of the several group characteristics which may impact the cohesion and outcome relationship. Groups which last between 13 to 19 sessions that have between 5 and 9 members may maximize the cohesion and outcome relationship. Groups that have an interactive focus on here-and-now process and spontaneously provide feedback also appear to maximize the cohesion-outcome link. Finally, groups created for the purpose of learning about group processes produce the largest effect sizes suggesting that they may be effective vehicles for mental health training.

Directions for Future Research

This meta-analysis found that group leader and member characteristics data was most often missing. Future research may uncover additional moderators for the cohesion-outcome association if new studies report more fully on these characteristics (Burlingame et al., 2004).

Table 14

Group Psychotherapy Intervention Rating Scale

Group structuring	
<i>Setting treatment expectations</i>	<ul style="list-style-type: none"> -Set group agenda (such as discussion topics or group activities) -Described rationale underlying treatment
<i>Establishing group procedures</i>	<ul style="list-style-type: none"> -Discussed group rules (such as time, attendance, absences, tardiness, confidentiality, participation) -Identified and discussed fears/concerns regarding self disclosure -Structured exercises that focused on emotional express and exchange
<i>Role preparation</i>	<ul style="list-style-type: none"> -Discussed member roles and responsibility -Discussed leader roles and responsibility
Verbal interaction	
<i>Verbal style and interaction</i>	<ul style="list-style-type: none"> -Modeled giving personal information in the “here and now” -Modeled appropriate member-member behavior -Modeled appropriate self disclosure -Modeled appropriate feeling disclosure -Maintained moderate control -Facilitated appropriate member-member interaction
<i>Self disclosure</i>	<ul style="list-style-type: none"> -Encouraged self disclosure without “forcing it” -Encouraged self disclosure relevant to the current group agenda -Helped members understand that disclosed issues achieve more resolution than undisclosed issues -Encouraged here-and-now vs. story-telling disclosure -Interrupted ill-timed or excessive member disclosure -Elicited member-member feeling disclosure (vs. informational disclosures) -Leader shared relevant personal experience from outside of therapy (without being judgmental or overly-intellectual)
<i>Feedback</i>	<ul style="list-style-type: none"> -Reframed injurious feedback (interrupting, if necessary) -Restated corrective feedback by member -Used consensus to reinforce feedback (toward therapist or member)

Table 14

Group Psychotherapy Intervention Rating Scale (continued)

<i>Feedback (continued)</i>	<ul style="list-style-type: none"> -Balanced positive and corrective leader-to-member feedback -Encouraged positive feedback -Gave structured feedback exercise -Helped balance positive and corrective member-to-member feedback -Therapist helped members apply in-group feedback to out-of-group situations
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Creating and maintaining a therapeutic emotional climate	
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<i>Leader contribution</i>	<ul style="list-style-type: none"> -Maintained balance in expressions of emotional support and confrontation -Showed understanding of the members and their concerns -Refrained from conveying personal feelings of hostility and anger in response to negative member behavior -Leader was not defensive when interventions failed -Leader was not defensive when confronted by a member -Maintained an active engagement with the group and its work -Used nonjudgmental language with members -Modeled expressions of open and genuine warmth -Encouraged active emotional encouragement between group members -Fostered a climate of both support and challenge -Responded at an emotional level -Developed and/or facilitated relationships with and among group members -Helped members recognize why they feel a certain way (identifying underlying concerns or motives)
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<i>Member contribution</i>	<ul style="list-style-type: none"> -Prevented or stopped attacking and judgmental expressions between members -Assisted members in describing their emotions -Recognized and responded to the meaning of groups members' comments -Prevented situations in which members felt discounted, misunderstood, attacked, or disconnected -Involved members in describing and resolving conflict (instead of avoiding conflict) -Elicited verbal expressions of support among group members -Encouraged members to respond to other members' emotional expressions (such as acceptance, belonging, empathy)
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Clearly, implementing the Journal Article Reporting Standards (JARS) suggested by APA Publications and Communications Board Working Group on Journal Article Reporting Standards (2008) will lead to more comprehensive future results. Finally, the inclusion of articles written in languages other than English will undoubtedly provide a more global perspective.

Interestingly, only two of the 40 studies reported purposefully manipulating leader interventions to affect the level of cohesiveness (Hurley, 1989; Kivlighan & Lilly, 1997). Each study had effect sizes higher than the overall weighted effect size. Santarsiero (1995) found that members who received pre-group training that was intended to increase group cohesion, indeed had statistically higher levels of group cohesion. This effect was corroborated in another study as “members who received cognitive pre-training showed some increased ability over the control group members to develop cohesion with the passage of time” (Palmer, 1997, p. 83).

Researchers who desire to study the effects of cohesion on group therapy would be wise to implement and document attempts to increase cohesiveness, to ensure this construct is being accurately studied. Finally, a meta-analysis further examining the relationship between cohesion and process would be warranted.

Strengths of the Study

The meta-analytic technique provides an organized and replicable technique thereby increasing both the replicability and generalizability of findings when compared with individual cohesion-outcome studies. Systematic bias, or threats to external validity, can occur in a single study. However, because many studies are aggregated, it is more likely that meta-analytic findings will be more robust and applicable to a larger population of clients and treatments. Some of the articles herein were international, increasing their global relevance. Finally, the

twenty variables tested herein have excluded some potential moderators of the cohesion-outcome relationship leading to more parsimonious evidence-based recommendations

Limitations of Study

A recognized limitation of the meta-analytic technique is that the quality of the results is largely dependent upon the research design, methodology, and reported information in individual studies. Research designs of differing quality with no uniform reporting standards describes the literature base for the cohesion-outcome link. In this particular study, 81% of analyzed group variables were available and coded showing the studied variables were gathered from a majority of the articles.

A common practice in meta-analytic research design is to assign an effect size of 0.00 when an article reports insignificant results and fails to provide further quantitative details. This conservative practice has proven to decrease the magnitude of the overall effect size. Matt and Navarro (1997) indeed found that the overall effect size in their study dropped 23% when 0.00 effect sizes were included, rather than just excluded from the study. This belief holds true because although a value is statistically insignificant, it often has an effect size greater than 0.00. However, a 0.00 effect size indicates no relationship exists, when in fact in most studies, small correlations occur, though they are not statistically significant, and consequently, not reported.

Within this meta-analysis, three studies (Antonuccio et al., 1987; Kipnes et al., 2002; Rice, 2001) were assigned effect sizes of 0.00 when they reported no significant correlations were found between outcome and cohesion. Their *N* ranged from 12 to 106 which comprised a total of 5% of the total *N* included in the meta-analysis. While it is believed utilizing an effect size of 0.00 did shrink the overall aggregated effect size, given these studies each contributed

small sample sizes, it is likely their contributions to the cohesion and outcome relationship was minor.

It is also believed the use of the 0.00 effect sizes may have impacted the moderator variables tested within the study. For example, on two of the statistically significant moderator variables (Length of Treatment or Group Focus), each of the three studies loaded on one factor (12 or fewer sessions; Problem specific group focus) which did not have the highest cohesion-outcome effect size. It is possible that had these three studies not been coded with a 0.00 effect size, it may have altered the magnitude differences between the perceived moderators, changing the results of the study. Conversely, for moderator variables which did not produce statistical significance (Group Leadership; Composition), it is possible that had they not had 0.00 effect sizes, those small values may have influenced the moderator values. Ultimately, running a meta-regression analysis would have been helpful in determining whether the significant moderator variables found within this study remained statistically significant once additional factors were controlled for, and future researchers are encouraged to do this for their own meta-analyses.

It was difficult to control the quality of the studies included herein. Excluding studies with lower quality of research designs would have further reduced an already small sample. Given that the quality of research most assuredly varied, caution should be exercised when interpreting these results. Relatedly, the low number of studies (i.e., due to exclusion criteria) undoubtedly limits our view of the literature testing the cohesion-outcome relationship thereby affecting the generalizability of the results. Thus, had the exclusion criteria been less stringent, it is believed a larger aggregated effect size could have been produced, and additional moderator variables identified. The current exclusion criteria removed almost all substance abuse articles, with the exception of those which measured outcome by psychological change. Had additional

these studies been included in the meta-analysis and increased the sample size and statistical power of the analyses, it is believed increased generalizability would have occurred. Similarly, several qualitative studies were not included in the meta-analysis which spoke to the relationship between cohesion and outcome. Should they have been included, it is believed the positive relationship found in the study would have been supported by these studies as well.

A particular limitation is in the variability of definition and measurement leading some to question whether we are creating an aggregate effect size that measures the same construct. However, this limitation is somewhat mitigated by the fact that the majority of studies herein operationalized cohesion similarly. Certain types of studies (e.g. interview, case study, case chapter) were excluded when quantitative findings were not reported (Lipsey & Wilson, 2001). Clearly, these studies could offer helpful clinical information, but they are outside of the scope of this study making findings incomparable. Finally, because this was a correlational study, the question of causality with respect to outcome cannot be adequately addressed at this time.

Conclusion

Cohesion has enjoyed considerable attention and controversy in the group therapy literature. The multitude of cohesion definitions and measures have made it difficult to understand this therapeutic factor despite claims cohesiveness can be linked to symptom reduction and improved group processes. This random effects meta-analysis provided a synthesis of the research examining the relationship between group cohesion and outcome. The aims of this review were to ascertain the overall magnitude of the relationship, identify variables which impacted this relationship, and assess and consolidate the cohesion definitions and measures being utilized. A total of 40 studies were analyzed, resulting in an overall weighted effect size of $r = .25$, suggesting a positive, moderate relationship exists between these

constructs. Specific group variables, including the length of treatment, group size, group focus and client age moderate this association. There are clinical implications from these moderators that may maximize the benefits of the cohesion and outcome relationship. Future research should focus on more consistent reporting standards and testing the affect of purposeful techniques to increase cohesion.

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Appendix A

Below is the codebook used by the coding team while they coded each of the articles included in the meta-analysis. When doing the statistical analysis, certain categories were collapsed due to insufficient power for certain variables

Study Characteristics

Year Published

= Year published

Outcome Measure(s)

- 1=Outcome Questionnaire-45 (OQ-45) (Lambert et al, 1997)
- 2=Beck Depression Inventory-II (BDI-II) (Beck, Steer & Brown, 1996)
- 3=Symptom Checklist (SCL-90) (Derogatis, 1977)
- 5=The Reaction to Comember Scale (Gruen, 1965)
- 6=Beck Anxiety Inventory (BAI) (Beck)
- 7=Inventory of Drug Use Consequences (InDUC) (Miller, Tonigan & Longabaugh, 1995)
- 8=Depression Anxiety Stress Scales (DASS-21) (Lovibond & Lovibond, 1995)
- 9=Illness Intrusiveness Ratings Scale (IIRS) (Devins, 1994)
- 10=Social Phobia Inventory (SPIN) (Connor et al, 2000)
- 11=Social Phobia and Anxiety Inventory (SPAI) (Turner, Beidel, et al 1989)
- 12=Quality of Life Inventory (QOLI) (Frisch 1992)
- 15=Inventory of Interpersonal Problems, IIP-Circumplex
- 17=Quality of Life after Myocardial Infarction Questionnaire (QLMI) (Hillers et al, 1994)
- 21=Multidimensional Measure of Emotional Abuse (MMEA) (Murphy, Hoover, & Taft, 1999)
- 23=Conflict Tactics Scale (CTS) (Straus, 1979)
- 24=Therapy Project List-90 (TPL-90) (Braaten, 1989)
- 32=The Center for Epidemiological Studies Depression Scale (CES-D) (Devins & Orme, 1985; Radloff, 1977)
- 33=The Social Provisions Scale (Cutrona & Russell, 1987)
- 34=The Parenting Scale (Arnold, O'Leary, Wolfe, & Acker, 1993)
- 41=Measurement of Hostility (as cited in Roether, 1972)
- 43=Self Help Report on Help (as cited in Wright, 1986)
- 44=Self Report on Harm (as cited in Wright, 1986)
- 47=European Organization for Research and Treatment of Cancer Quality of Life Questionnaire- C30 (EORTC-QLQ-C30)
- 51=Hamilton Psychiatric Rating Scale for Depression (Hamilton, 1960)
- 58=Social Adjustment Scale (Weissman and Bothwell, 1976) - IIP Measure
- 59=Objective Behaviors Index (Marziali, Munroe-Blum, & McLeary, 1996) – Other
- 61=Problem Drinking Scale (Rugel, 1990)
- 66=General symptoms (the name of the measure isn't listed -- See Joyce 07)

- 67=Grief Symptoms (the name of the measure isn't listed -- See Joyce 07)
 68=Target Objectives/Life Satisfaction (the name of the measure isn't listed -- See Joyce 07)
 69=Target complaint form (from Kivilighan 97 who cites Battle et al 1967)
 70=Rosenberg Self-Esteem Scale (Rosenberg, 1965)
 71=Coopersmith Self-Esteem Inventory (Coopersmith, 1967)
 72=UCLA Loneliness Scale (Russell et al., 1978)
 83=Sex Offender Treatment Rating Scale (SOTRS; Anderson et al., 1995)
 84=Facets of Sex Offender Denial Scale (FoDOS; Schneider & Wright, 2001)
 85=Problem Disclosure designed and scored for Flowers 1981
 86=Zung Depression
 87=Systolic Blood Pressure Measurement (see Andel 03)
 88=Distolic Blood Pressure Measurement (see Andel 03)
 89=Profile of Mood States (POMS; McNair et al., 1981)
 90=State-Trait Anxiety Inventory- State Form (STAI-S) (Spielberger, 1983)
 92=Assessment of Changes in Vocational Attitudes (see Beutal 06)
 93=Treatment Satisfaction Questionnaire (see Beutal 06)
 94=Ratings of Change (3 domains: Symptoms, Functioning, & Relationships) (Yalom et. al, 1967)
 97=Young Schema Questionnaire (see Ryum 09)
 98=Ratings of Acceptance vs Rejection (see Hurley 97)
 99=This value indicates multiple measures used and combined by article authors. Unable to differentiate one measure from another.
 100=Target social problems (PtAB) - from Falloon 77 article (for the Falloon 81 article)
 101=Social anxiety-avoidance (Pt) - - from Falloon 77 article (for the Falloon 81 article)
 102=Social Leisure - from Falloon 77 article (for the Falloon 81 article)
 103=Self Image (Pt) - from Falloon 77 article (for the Falloon 81 article)
 104=SSIAM Ratings by Gurland 72

Cohesion Measure(s)

*May not be chronological as the ones below are only the ones included in the study

- 1=Some mystery cohesion measure. No details are given about it.
 2=Group Cohesion Scale-Revised (GCS-R) (Treadwell et al, 2001)
 4=Group Atmosphere Scale (GAS-C) (Silbergeld et al, 1975)
 5= Group Environment Scale (GES) (Moos, 1986)
 6=Group Attitude Scale (GAS) (Evans & Jarvis, 1986)
 8=Stuttgarter Bogen (Czogalik & Koeltzow, 1987)
 10=California Psychotherapy Alliance Scale- Group (CALPAS-G) (Gaston & Marmar, 1994)
 12="The Harvard Community Health Group Cohesiveness Scale (GCS) (Budman and Soldz, 1993)
 15=Group Climate Questionnaire (GCQ) (MacKenzie, 1981)
 16=Group Cohesion Questionnaire (GCQ) (Andel et al, 2003)
 35=Gross Cohesion Scale or Schutz Cohesiveness Questionnaire (Gross, 1957)... (Yet revised by Lieberman et. al, 1973; Yalom in 67 and Stokes in 83)

- 39=Group Factors Checklist (Roether & Peters, 1972)
 47=Group Cohesion Questionnaire (GCQ-22) (Trijsburg, Bogaerds, Letiche, Bidzjel, Duivenvoorden, 2004)
 50=Attending-to-the-speaker (as cited in Flowers, 1981)
 52=Group Engagement Measure (GEM) (Macgowan 1997, 2000)
 57=Asks 3 questions of the group member about the group and leaders. likert scale (see Falloon 81)
 99=This value indicates multiple measures used and combined by article authors. Unable to differentiate one measure from another.
 101=Combined for analysis: Group Attitude Scale (Evans & Jarvis, 1986) & Group Climate Questionnaire (MacKenzie, 1981)

What type of outcome measure(s) are they using?

- 1=General psychological distress (e.g. OQ-45, SCL-90)
 2=Depression measure
 3=Anxiety measure
 4=Quality of life/General well being
 5=Interpersonal Problems/Relationships (e.g. IIP)
 6=Self Esteem
 7=Other (eating disorder, self harm, trauma)

Attrition

= Mean percent group drop out across all treatments

Cohesion Definition the ARTICLE uses

- 1= Attraction and Bonding (p.5 of Braaten 1991 article)
 2= Support and Caring (p.6)
 3= Listening and Empathy (p.6)
 4=Self-Disclosure and Feedback (p.6)
 5=Process Performance and Goal Attainment (p.7)

Cohesion MEASURE'S definition

*see above

Number of administrations of the cohesion measure

- 1=Measure administered 1 time during the entire study
 2=2 times
 3=3 times
 4=4 times
 5=5+ times

Time of Cohesion Measures Administration

- 1=Pre/Post only
 2=Intermittent (administered multiple times, e.g. mid & post)
 3=Beginning Only (1 administration)
 4=Middle only (1 administration)

5=End Only (1 administration)

LEADERSHIP VARIABLES

Number of Therapists

= # therapists in study

Therapist Gender

1=Only Females

2=Only Males

3=Mixed Genders

Therapist Experience

1=Students

2=Professional (no further information provided)

3=Professional with 0-5 years

4=Professional with 6-10

5=Professional with 10+ years

6=Student and Professional Therapists (no further information provided)

Therapist Experience – Collapsed

1=Students involved (students only or students + professionals) (1, 6)

2=Professionals (2-5)

Mean Years of Therapist Experience

= # of mean years of experience with all therapists (exact #)

Group Leadership

1=Single Leader

2=Co-Led by two Leaders

3=Mixed (some single, some co-led)

Leader's Professional Degree (choose all that apply)

1=MS-level Student

2=PhD-level Student

3=Graduate Student (unspecified, multiple levels of students)

4= Psychologist

5= Psychiatrist

6= Social Worker

7= Paraprofessional (psych tech, missionary couple)

8=Masters level People (e.g. occupational therapist, etc.)

9= Nurse

10= PhD level Therapist

11=Licensed Therapist

12=Medical Doctor

Leader's Professional Degree

1=Students involved

- 2=Psychologist involved
- Leader's Theoretical Orientation
- 1=Behavioral
 - 2=Cognitive-Behavioral
 - 3=Humanistic
 - 4=Psychodynamic (Psychoanalytic; Interpretive)
 - 5=Existential
 - 6=Interpersonal
 - 7=Supportive
 - 8=Eclectic

CLIENT VARIABLES

Sample size included in final analysis

= # total N included in the analysis (treatment completers; not intent to treat)

Client Age (check all that apply)

- 1=Children (0-12)
- 2=Adolescences (13-17)
- 3=Adults (18+)

Average age of group members

=average age of all group members (use whole numbers, so round when necessary)

Actual percentage of group members who are female

=actual percentage

Client Gender

- 1=Only Females
- 2=Only Males
- 3=Mixed Genders in the study

Clients Race

- 1=Greater than 60% White
- 2=Greater than 60% Black
- 3=Greater than 60% Hispanic
- 4=Greater than 60% other minority
- 5=Mixed, none more than 60%
- 6=Mixed, cannot estimate proportion

Primary Diagnosis (purpose of study)

- 1=Informal (specific criteria from DSM/ICD not referred to – self esteem, etc)
- 2=Anxiety Disorder (Panic, PTSD, Generalized Anxiety)
- 3=Mood Disorder (Depression, Bipolar)
- 4=Substance Disorder
- 5=Eating Disorders (Bulimia, Anorexia)

- 6=Personality Disorders (Axis II: Borderline, Antisocial, Dependent)
- 7=Psychotic Disorders (Schizophrenia, Delusions)
- 8=Somatoform Disorders (Conversion, Hypochondriasis)
- 9=Dissociative Disorders (Multiple Personality/Dissociative Identity)
- 10=Sleep Disorders (Insomnia)
- 11=Impulsive-Control Disorders (Pyromania, Trichotillomania)
- 12=Childhood Disorders (ADHD, Autism, Learning Disabilities)
- 13=Sexual/Gender Identity Disorders (Premature Ejaculation, Transexual)
- 14=Delirium/Dementia Disorders
- 15=Adjustment Disorders
- 16=Medical Condition (cardiac treatment, breast cancer)

Secondary Diagnoses (any other which apply)

**see above

Concurrent Treatment (Also receiving the following treatment while in group)

- 1=Individual Therapy
- 2=Psychopharmacology (medication)
- 3=Milieu (occurs in a hospital/inpatient setting where multiple groups or other programming are happening)
- 4=Psychoeducation (structured, didactic instruction, topic oriented)
- 5=None (only if they specifically say this)

GROUP VARIABLES

Small Group Processes Mentioned

- 1=No, not mentioned in the methods
- 2=Yes, mentioned in the methods (how they will enhance cohesion)

Treatment Structure

- 1=Manual-based (session structured after a detailed treatment manual)
- 2=Model-based (theoretical orientation guides session a certain therapeutic approach)
- 3=Natural/Nothing

Treatment Integrity/Fidelity (only if manual based treatment used)

- 1=No
- 2=Yes (efforts made to ensure treatment protocol was followed)

What type of counseling group is this? (They're all counseling groups)

- 1=Process/Interactive group
- 2=Problem specific group
- 3=Both types of groups included in study

Group Membership

- 1=Open (clients may enter after it begins or terminate at different times)
- 2=Closed (membership is limited and set at beginning; time may also be limited)

Group Composition

- 1=Homogeneity (based on “same” dimension whether diagnostic category, presenting problem, or treatment focus)
- 2=Heterogeneity (various categories, mixed disorder or dissimilar focus)
- 3=Multiple groups with homogenous and heterogeneous members

Group Size (# members, excluding leader)

- 1=Small (1-4 people)
- 2=Moderate (5-9 people)
- 3=Large (10+ people)
- 4=Varying sizes (multiple groups involved of different sizes)

Actual number of participants in each group

=Actual number of participants (If give the value for multiple groups, average them)

Number of Groups Included

= # therapy groups in study

Group Session Length

= Minutes per session

Length of Sessions in Treatment

= # sessions per treatment (If multiple groups each have different sessions, average them)

Average number group members who attended each session

= Exact average # sessions the average member attended (e.g. 9.2 sessions)

Session frequency

- 0=More than Twice a Week
- 1=Twice a Week
- 2=Weekly
- 3=Twice a Month
- 4=Once a Month
- 5=Variable (May vary depending on their course in treatment)
- 6=Booster Session Included

Entrance into *Treatment* (not into the *study*)

- 1=Referred (by self, therapist, physician)
- 2=Recruited (public announcement, newspaper, psychology class, volunteer)
- 3=Required (inpatient; court ordered; for school; for probation)

Treatment Setting

- 1=Inpatient (clients live at the mental health facility)
- 2=Outpatient

3=Mixed

Treatment Location

1=University Counseling Center

2=Clinic or Private Practice

3=University Medical Center (only when a University or says UMC)

4=Community Mental Health Center

5=Hospital

6=VA/Veterans Center/Hospital

7=State Hospital

8=Correctional Institution

9=Residential Treatment Center (drug rehab)

10=Community Center (YMCA)

11=Classroom setting/school

Appendix B

This meta-analysis was included as part of an update to an earlier chapter on cohesion published in 2002. It was also included in a summary of this chapter in the second 2011 publication. Finally, a summary of the results were also published on the SAMHSA website in 2010.

Burlingame, G., McClendon, D. T., & Alonso, J. (2011). Cohesion in group psychotherapy. In J. C. Norcross (Ed.), *A Guide to Psychotherapy Relationships that Work* (2nd Ed.). Oxford University Press.

Burlingame, G. M., McClendon, D. T., & Alonso, J. (2011). Cohesion in Group Therapy. *Psychotherapy, 48*(1), 34-42. doi: 10.1037/a0022063

SAMHSA NREPP entry on cohesion in group therapy as evidence-based practice (2010).
<http://www.nrepp.samhsa.gov/Norcross.aspx>