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The Relationship of Alliance, Cohesion, and
Group Climate with Outcome

Rachel Anne Arnold

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

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Abstract

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Therapeutic alliance, cohesion, and group climate are all important relationship components of group therapy which have been shown to predict client outcome. Yet, due to discrepancies in how these are defined and measured in the literature, how these three constructs differentially predict outcome is not yet fully understood. For instance, most studies only assess a single construct and often do so with outcome assessed from a pre-post perspective rather than continuously. The present study is an archival analysis on Group Questionnaire (GQ) positive bond and Outcome Questionnaire-45 (OQ-45) data that aims to elucidate the predictive relationship of therapeutic alliance, group cohesion, and climate with client outcome in group therapy. Furthermore, this study is intended to clarify past discrepancies by studying alliance, cohesion, and group climate simultaneously, as well as address limitations of previous studies by exploring the relationship with outcome over the life of a group using continuous data. Results demonstrate that symptom improvement on the OQ-45 total score has a positive relationship with each of the GQ positive bond constructs (i.e., alliance, cohesion, and climate). This relationship was significant regarding session-to-session fluctuations on a given client's scores, as well as regarding differences between clients in their personal averages across sessions. However, when linear growth trajectories are considered that take session to session change in the three relationship constructs and outcome, only alliance emerges as a significant predictor of improvement. In other words, alliance, climate, cohesion all predict outcome when time is ignored; however, only alliance significantly predicts outcome when change over time is taken

into account. These results highlight the importance of the client-therapist relationship to outcome in group therapy setting, mirroring some past research findings.

Keywords: alliance, cohesion, climate, group therapy, outcome, Group Questionnaire

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The Relationship of Alliance, Cohesion, and Group Climate with Outcome

The effect of therapeutic relationships on client outcome has been a subject of interest for many years, with Frank and Frank (1991) even identifying the therapeutic relationship as one of six common factors among psychotherapies that lead to successful outcomes. Research has consistently emphasized a relationship between the client-therapist relationship (i.e., alliance) and client outcome (Crits-Christoph et al., 2011; Flückiger et al., 2018; Tschuschke et al., 2020), highlighting how the therapeutic relationship between client and therapist is of great importance. However, group therapy introduces a new level of complexity. Not only is there the relationship between the client and the therapist, but two other relationship structures exist. There are the clients' relationships with other group members (i.e., cohesion) and with the group as-a-whole (i.e., group climate).

In the early 2000's an international collaboration between group researchers at Brigham Young University and Friedrich-Schiller University in Germany studied the relationship between the most commonly used measures of alliance, cohesion and climate. This research led to an empirically derived relationship scale called the Group Questionnaire—GQ. As noted in the *Administration and Scoring Manual for the Group Questionnaire OQ-GQ* these three concepts loaded on an empirically derived latent factor called Positive Bond. The PB subscale of the GQ was defined as “the emotional connection and attachment that a group member feels toward other members, the leader and group-as-a-whole” (Burlingame et al., 2017, p. 12). Given previous findings on the effects of alliance on outcome in individual therapy contexts, the question that arises is whether these three aspects of positive bond are all related to client outcome in group therapy contexts and, if so, whether the predictive relationship is more significant among alliance, cohesion, or climate over time. Stated differently, we were interested

in testing the independent relationship that each of these constructs had with outcome as well as examining the combined predictive relationship.

Literature Review

The Influence of Alliance on Outcome in Group Therapy

To be clear, the study of therapeutic relationships in the context of group therapy is by no means new. Alliance, a concept that was originally introduced in the 1950's by Ztezel (1956) in relation to psychodynamic therapy, is a popular topic in psychotherapy research (Flückiger et al., 2018). Tasca et al. (2016) even went so far as to claim that “it is almost a truism that the therapeutic alliance is important to patient outcomes ” (p. 443). Therefore, it should be of no surprise that the study of alliance has extended into group therapy literature.

Research has demonstrated that alliance is related to positive outcomes among several group therapy populations, including group therapy for clients with personality dysfunction (Aafjes-van Doorn et al., 2019), cancer patients (Bisseling et al., 2019), grief clients (Joyce et al., 2007), eating disordered clients (Maxwell, et al., 2018; Tasca & Lampard, 2012; Tasca et al., 2016), children with externalizing behavioral problems (Schmidt et al., 2014), clients in a positive psychotherapy intervention (Uliaszek et al., 2018), and depressed clients (Vislă et al., 2018). Thus, it is evident that alliance is predictive of positive change or improvement in heterogenous group therapy populations. A recent random effects meta-analysis on 29 studies of group therapy alliance (Alldredge et al., 2021) gives further support to the notion of alliance and outcome being linked. Specifically, the authors reported a significant weighted average correlation of $r = .17$ ($p < .01$) between alliance and treatment outcome. Notably, Alldredge et al. found the effect of alliance in group therapy to be smaller than it is in individual therapy, which might be explained by the fact that there are multiple therapeutic relationships in group therapy.

In all, evidence suggests that a therapist should seek to build strong relationships with group members to help ensure positive outcomes; however, the effect of other relationships on outcome are also important to consider.

The Influence of Cohesion on Outcome in Group Therapy

Like alliance, cohesion has also been a popular subject of study, with Burlingame et al. (2018a) stating that cohesion is “the most popular of several relationship constructs (e.g., alliance, group climate, and group atmosphere) in the clinical and empirical literature on groups” (p. 384). A strong literature base demonstrates a “well-established” relationship between cohesion and outcome (Chapman & Kivlighan, 2019, p. 91), with two meta-analyses demonstrating weighted aggregate correlations of $r = .25$ (Burlingame et al., 2011) and $r = .26$ (Burlingame et al., 2018a). This relationship has also been studied among various client populations including clients with interpersonal concerns (Chapman & Kivlighan, 2019), posttraumatic stress disorder (Ellis et al., 2014), binge eating and attachment anxiety (Gallagher et al., 2014), personality disorders (Hauber et al., 2019), psychosis (Lecomte et al., 2018), and anxiety (Paulus et al., 2015), as well as short-term therapy clients (Lorentzen et al., 2018). This gives support to the idea that, like alliance, cohesion has an impact on client outcome among clients with varied presenting problems.

However, it is important to note that the study of cohesion has been plagued by the lack of consensus on a definition (Burlingame et al., 2011; Burlingame & Jensen, 2017; Chapman & Kivlighan, 2019), which makes it difficult to synthesize findings. This is demonstrated by Burlingame et al. (2018a), who explored how various cohesion measures conceptualize cohesion. For instance, while some measures “go beyond affective elements and tap the work orientation of the group” (p. 385), others do not. Further, Burlingame et al. warn that “the research has not

simultaneously studied two or more cohesion measures in the same study, which makes it impossible to determine if different or similar relationship constructs are being assessed” (p. 385). In all, while the literature on cohesion suggests a link with outcome, limitations related to the study of cohesion introduce complications that make it difficult to make clear conclusions.

The Influence of Climate on Outcome

Like alliance and cohesion, climate has also been a popular subject of study. As a matter of fact, Manne et al. (2016) claim that “climate is the most widely studied group process” (p. 2175). Climate has been found to be related to positive outcomes as well, such as in the treatment of social phobia (Bonsasken et al., 2013), personality dysfunction (Kealy et al., 2020), and schizophrenia (Orfanos & Priebe, 2017). Notably, some of these findings particularly focus on the engagement subscale of the Group Climate Questionnaire (MacKenzie, 1981) as a method for measuring the positive aspects of group climate. For instance, sometimes studies such as Kealy et al. (2020) only use the Engagement subscale when studying the link between climate and outcome. In all, the literature demonstrates that climate is important to client outcomes.

However, like cohesion, the study of climate has not been straightforward. Since Bolman (1971) identified climate as group tension, group withdrawal, the definition has dramatically evolved. For instance, two decades later Yalom (1995) defined climate as group culture. McClendon and Burlingame (2011) give some clarity to the conceptualization of climate, concluding that “group” is typically the unit of analysis across most definitions; thus, “group climate is structurally a member-group phenomenon” (p. 176). Still, the issue of incongruent definitions through time poses questions about whether research findings truly relate to the same construct. Another challenge in the study of climate is that cohesion and climate are intertwined. For example, Nickerson and Coleman (2006) study climate and member attraction “as measures

of cohesion” (p. 119) and state, “There is a consensus in the group-counseling literature that cohesion is a multidimensional construct related to, among other processes, the broader context of group climate” (p. 121). Cohesion has been suggested to contribute to climate, and some studies have even defined climate as “cohesion” (McClendon & Burlingame, 2011). Given the interconnection between cohesion and climate, it is unclear how to separate the two in research. Therefore, while climate has been found to relate to positive outcomes, limitations in the research are important to address.

In all, the current research literature demonstrates that when studied individually, alliance, cohesion, and climate each uniquely relate to client outcome. That is, client outcomes are not only affected by the relationship between the client and therapist, but also between the client and other group members, as well as between the client and the group-as-a-whole. Yet, it is difficult to draw clear and distinct conclusions for either cohesion or climate simply because of limitations in the research.

Simultaneous Study of Alliance, Cohesion, and Climate

Another level of complexity is added to the study of group therapy relationships when researchers analyze more than simply alliance, cohesion, or climate alone. That is, some studies have explored two or three of these constructs simultaneously. However, such studies have proved to be discrepant in their findings. This raises questions about what group relationships affect outcome, and how findings rely on which constructs are studied.

For one, Joyce et al. (2007) and Norton and Kazantzis (2016) both studied alliance and cohesion. Both found alliance and cohesion to be related to outcome, though findings for cohesion were limited; namely, only some cohesion variables were associated with outcome for Joyce et al., while Norton and Kazantzis only found cohesion to be significant at sessions 8 and

10. In contrast, Crowe and Grenyar (2008) found that alliance was *not* related to outcome in the treatment of depression; certain components of group cohesion, though, were associated with client satisfaction while perceptions of conflict (related to climate) were predictive of outcome.

More recently, Kealy et al. (2018) reported that alliance and components of cohesion were significant, but “an engaged group climate emerged as most salient” (p. 33). Meanwhile, Cruz et al. (2020), who considered both climate and cohesion in relation to client outcome, reported largely null results. Lastly, Kivlighan et al. (2017) emphasized the importance of studying alliance, cohesion, and climate together, with discrepancies between the relationships being related to poorer outcome. In all, while group relationships are generally found to be significant when studied individually, findings have been mixed when alliance, cohesion, and climate have been studied together; each construct has been found to be significant by at least one researcher, but not been significant according to other researchers.

Overall, the research literature indicates a need to study group therapy relationships more in depth. While alliance, cohesion, and climate are generally found to be related to outcome when studied separately, their relationships with outcome becomes unclear when studied simultaneously. Further, with limitations in the research (e.g., inconsistent definitions), it is difficult to synthesize findings and draw clear conclusions. Additionally, the majority of studies have lacked continuous measurement. Given these limitations and discrepancies, further research is necessary to clarify the relationship of alliance, cohesion, and climate with client outcome.

The Current Study

The current study is an archival analysis of data from the Group Questionnaire-30 (GQ) (i.e., a 30-question questionnaire that asks clients about their experience in group therapy) and the Outcome Questionnaire-45 (OQ-45) (i.e., a 45-item measure of client distress). Through

assessing the associations between GQ and OQ-45 scores, this study aims to further investigate what the predictive relationships of therapeutic alliance, group cohesion, and climate are with client outcome in group therapy. This study seeks to address prior limitations by studying alliance, cohesion, and climate together, while also utilizing continuous measurement. One goal is to clarify the discrepancies found in past articles that have simultaneously studied alliance, cohesion, and/or climate. The GQ provides distinctive questions for alliance, cohesion, and climate, drawn from specific measures that are frequently used in the group psychotherapy literature to measure each. More specifically, the GQ alliance items are drawn from the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), the cohesion items are drawn from the Therapeutic Factor Inventory Cohesion subscale (TFI-C; Lese & MacNair-Semands, 2000), and the climate items are drawn from the Group Climate Questionnaire (GCQ; MacKenzie, 1981) (Burlingame et al., 2017). Thus, by studying each of these simultaneously, we address the prior limitation in research wherein cohesion and climate were not clearly differentiated. Further, the current study builds on the parent study (Burlingame et al., 2018b), the aim of which was to “ascertain if therapeutic relationship feedback using the GQ reduced rates of relationship deterioration and failure when progress feedback was held constant” (Burlingame et al., 2018b, p. 116). One of their findings was that “therapeutic relationship predicted improvement in outcome” (p. 116). The current study delves deeper into the finding that GQ feedback is related to improvements in positive bond, with an aim to dismantle the three structural aspects of positive bond (i.e., alliance, cohesion, and climate).

Based on previous research indicating that stronger alliance, cohesion, and climate are all individually associated with better client outcomes, all three constructs are predicted to each be positively related to client outcome. Further, due to inconsistencies in research studying one or

more aspects of positive bond, alliance, cohesion, and climate are expected to equally predict outcome. Therefore, this study includes four hypotheses:

- Hypothesis one: There will be a negative relationship between alliance GQ scores and total OQ-45 scores; stronger alliance will be associated with lower client distress.
- Hypothesis two: There will be a negative relationship between group cohesion GQ scores and total OQ-45 scores; stronger cohesion will be associated with lower client distress.
- Hypothesis three: There will be a negative relationship between group climate GQ scores and total OQ-45 scores; stronger climate will be associated with lower client distress.
- Hypothesis four: Alliance, cohesion, and climate will equally predict outcome; that is, the relationship between alliance, cohesion, and climate with outcome will produce similar linear trajectories.

In short, it is expected that greater alliance, cohesion, and climate will all be individually associated with lower client distress, and that each will be equally associated with outcome.

Methods

Data for this study was drawn from a randomized controlled trial (RCT) which involved randomization of therapy groups into a feedback condition or non-feedback condition (Burlingame et al., 2018b). In the original study, Burlingame et al. explored whether GQ feedback was related to less therapeutic relationship deterioration and failure. Group leaders in the feedback condition used both OQ-45 and GQ data as a means of guiding treatment; leaders in the non-feedback condition only collected OQ-45 data. They found that GQ feedback was related to improvements in positive bond and positive work (i.e., “collaborative engagement of the leader, member and group in therapeutic work toward consensus treatment tasks and goals” (Burlingame et al., 2017, p. 12)), but not negative relationship (i.e., “painful and unpleasant

aspects of the group relationship that may adversely affect member attachments or impede the therapeutic work” (Burlingame et al., 2017, p. 12)). Again, the current study compliments the parent study by further exploring how GQ feedback is related to improvements in positive bond, with an aim to deconstruct positive bond into alliance, cohesion, and climate. More details about the parent study and its results are provided by Burlingame et al.

Participants

Participants included students enrolled in group therapy at the Brigham Young University, Utah State University, and Southern Utah University counseling centers. These students agreed to be part of the parent study after being recruited by counseling center workers at their first group session. Students were enrolled in a therapy group according to their need and availability; thus, it was each therapy group (rather than students) that were randomized to a feedback or non-feedback condition. There were 455 students invited to participate. Ultimately, 58 groups (including 412 students) were included in the current analyses. Participants included in the current analysis were on average around 24-years-old, 56% female, 89% Caucasian, and 89% unmarried. The majority of participants were religious, with 80.9% being members of the Church of Jesus Christ of Latter Day Saints. Clients reported typical presenting problems for a college counseling center. Relationship issues, anxiety, and depression were among the most frequently reported presenting concerns. Approval was obtained by the Institutional Review Board to collect data from September 2012 to December 2014. Group leaders distributed consent forms, which were then collected and stored by research assistants at the counseling center or a research office.

Measures

Alliance, cohesion, and climate were measured through the GQ, which clients completed on a weekly basis (corresponding to their group therapy attendance). The GQ is a 30-item self-

report measure in which group members respond to statements related to their experiences in group therapy. Answers lie on a 7-point Likert scale ranging from “not true at all” to “very true.” The GQ aims to measure the quality of therapeutic relationships in group therapy on three subscale levels: positive bond, positive work, and negative relationships. These subscale levels have three relationship dimensions: member-to-leader, member-to-member, and member-to-group. Alliance, cohesion, and climate are all aspects of positive bond that correspond to these dimensions, making the positive bond score of particular interest in the current study. Good reliability has been reported for all three subscale levels; specifically, reported reliability for positive bond ranges from .79 to .93, while positive work ranges from .85 to .91 and negative relationship ranges from .79 to .86 (Chapman et al., 2012; Krogel et al, 2013; Thayer & Burlingame, 2014). Research has found that the GQ has criterion validity as well, with acceptable correlations reported with other group relationship measures (e.g., the Working Alliance Inventory, Group Climate Questionnaire) (Thayer & Burlingame, 2014).

All participants were asked to complete the OQ-45 on a weekly basis as a measure of participant distress over time. The OQ-45 is a 45-item self-report measure of client psychiatric distress in which clients respond to statements about interpersonal relations, symptom distress, and social role performance (with answers lying on a 5-point Likert scale ranging from “never” to “almost always”). Higher scores are associated with greater client distress. Lambert and Ogles (2004) found the OQ-45 to have an internal consistency of .93 as well as a test-retest reliability of .84. This questionnaire was included as a means of assessing client progress over the course of group therapy, with the expectation that higher GQ scores would be associated with lower OQ-45 scores (indicating lower client distress).

Procedure

Group leaders were invited to involve their therapy groups at research and faculty meetings. Interested leaders were required to lead at least one pair of groups that included a feedback group and non-feedback group, with each group being randomized into one of the conditions. Group leaders were not paid for their participation in the research and were not involved in the data analysis but would benefit from the collection of OQ-45 data as a means of tracking client progress.

Students were recruited to become involved in the study by counseling center workers at intake and were eligible to join for the first four weeks of the group; after the conclusion of the fourth group, clients were no longer eligible to participate. Students that expressed interest were referred to a study group leader, who used a recruitment script to explain the study and assessed eligibility. Inclusion criteria for the RCT included willingness to commit to at least four sessions of group treatment, complete GQ and OQ-45 on a weekly basis, and have group be their primary mode of treatment. Exclusion criteria included participation in a study group that received GQ/OQ-45 feedback in an earlier semester, participation in a group where the majority of members want to carry over to the next semester, and no email address. Demographic data for each participant was collected from the counseling center, including sex, race, religion, etc.

Students whose groups were randomized to the feedback condition were asked to complete weekly OQ-45 and GQ measures. The OQ-45 was filled out before the start of each weekly group session, while the GQ was distributed after the group session. Both questionnaires were offered in paper, iPad, and online formats according to client preference. Students that were unable to complete a GQ immediately after group were emailed a link to complete it online, with the GQ needing to be submitted before the start of the next group. Students were paid for their participation, including \$10 for consent to participate, \$5 for every weekly OQ-45/GQ set

completed, and a \$20 bonus given to clients who completed all OQ-45/GQ sets. In all, students could gain up to \$90 in total. Money was distributed at the conclusion of group therapy. At this time, data was de-identified as well and any personally-identifiable information was removed. Clients are referenced by a unique ID randomly assigned to them at the beginning of the study.

Design and Analysis

Statistical analyses explored the intercorrelations between sessions, clients, and groups for the GQ positive bond scores and the OQ-45 total score. These analyses established the relationship that alliance, cohesion, and climate have with each other. Further, these analyses explored the relationship that alliance, cohesion, and climate have with the OQ-45 total score; in doing so, they addressed the first three hypotheses, which were again as follows:

- Hypothesis one: There will be a negative relationship between alliance GQ scores and total OQ-45 scores; stronger alliance will be associated with lower client distress.
- Hypothesis two: There will be a negative relationship between group cohesion GQ scores and total OQ-45 scores; stronger cohesion will be associated with lower client distress.
- Hypothesis three: There will be a negative relationship between group climate GQ scores and total OQ-45 scores; stronger climate will be associated with lower client distress.

This analysis included standard multilevel correlations between variables at the within-person level (i.e., session-to-session differences from a given individual's overall mean on average alliance, cohesion, climate, and OQ-45), between-person level (i.e., differences between clients in their personal average alliance, cohesion, climate, and OQ-45 scores across sessions), and between-group level (i.e., differences from group to group in their average alliance, cohesion, climate, and OQ-45 scores across sessions). Intraclass correlations for these same measures were calculated at the person and group levels, indicating the amount of variability in the measures

that is attributable to the person and to group membership. The analysis was a multivariate three-level random intercept model with freely estimated covariances (and correlations) at each level.

Additional analyses took into account the effect of time, including estimations of random slopes for the linear regression of the GQ components (i.e., alliance, cohesion, climate) and the OQ-45 scores on time. These estimations demonstrated linear growth trajectories for GQ and OQ-45 scores across the course of the study, with a maximum of 12 group therapy sessions. The means of these linear growth trajectory random effects provided the overall average effect of time on the GQ components and the OQ-45 scores; that is, the means demonstrated how much the GQ and OQ-45 scores each change per session on average. The associations between the linear growth trajectories were then calculated for alliance, cohesion, climate, and OQ-45 scores in terms of their estimated covariances at a between-person level. These analyses established the relationship that the GQ positive bond constructs (i.e., alliance, cohesion, and climate) have with each other. Further, these analyses illustrated the relationship that alliance, cohesion, and climate have with change on the OQ-45 total score, which addresses the final hypothesis (i.e., alliance, cohesion, and climate will equally predict outcome). Finally, variances and covariances were used to approximate standardized correlations among the client-level alliance, cohesion, climate, and OQ-45 total score linear trajectories.

Results

Multilevel Correlations

At the within-person level, session-to-session differences between the three GQ scores were all significantly positively correlated ($p < .001$), including correlations between alliance and cohesion (i.e., 0.60), alliance and climate (i.e., 0.48), and cohesion and climate (i.e., 0.73) (Table 1). These results indicate that if one of the GQ scores is high for a given client during a session,

other GQ scores would also likely be higher than the client's average; for instance, if a client's alliance score is high, the client's cohesion score will also likely be relatively high. These results illustrate that a perceived improvement in one therapeutic relationship would be expected to correspond with improvement in other relationships. Meanwhile, differences in the session-to-session OQ-45 score were significantly negatively correlated ($p < .01$) with alliance (i.e., -0.06), cohesion (i.e., -0.07), and climate (i.e., -0.08) (Table 1). Therefore, at the within-person level of a standard multilevel analysis, the first three hypotheses were supported; greater alliance, cohesion, and/or climate during a session were associated with a lower OQ-45 total score for a client during the session. While the correlations were statistically significant, they were rather small; they reflect within-person session-to-session variation and association.

Table 1*Within-person level intercorrelations*

	Estimate	S.E.	Two-tailed p-value
Alliance			
Cohesion	0.60	0.03	<0.01
Climate	0.48	0.02	<0.01
OQ score	-0.06	0.02	<0.01
Cohesion			
Climate	0.73	0.02	<0.01
OQ score	-0.07	0.03	<0.01
Climate			
OQ score	-0.08	0.02	<0.01

When comparing clients at the between-person level, GQ scores were all significantly positively correlated ($p < .001$), including alliance and cohesion (i.e., 0.73), alliance and climate (i.e., 0.73), and cohesion and climate (i.e., 0.94) (Table 2). This indicates that a client with one high GQ score (i.e., alliance, cohesion, or climate) would also likely show other higher GQ scores than the average client; for instance, if a client views his or her relationship with the therapist more positively than other clients on average, the client will also likely perceive higher-

than-average positive relationships with other members and the group as-a-whole. Notably, the correlation between cohesion and climate is considerably high relative to the other two correlations. Meanwhile, differences in OQ-45 scores between clients were significantly negatively correlated ($p < .01$) with alliance (i.e., -0.22), cohesion (i.e., -0.28), and climate (i.e., -0.31) (Table 2). Therefore, at the between-person level of a standard multilevel correlation analysis, the first three hypotheses were again supported; better alliance, cohesion, and/or climate were associated with lower OQ-45 scores between clients.

Table 2*Between-person level intercorrelations*

	Estimate	S.E.	Two-tailed p-value
Alliance			
Cohesion	0.73	0.04	<0.01
Climate	0.73	0.04	<0.01
OQ score	-0.22	0.06	<0.01
Cohesion			
Climate	0.94	0.01	<0.01
OQ score	-0.28	0.05	<0.01
Climate			
OQ score	-0.31	0.06	<0.01

At the between-group level, the GQ variables were again significantly positively correlated ($p < .01$), indicating that groups with one high GQ score would also likely show high scores on other GQ relationship constructs (Table 3). Correlations between alliance and cohesion (i.e., 0.84), alliance and climate (i.e., 0.85), and cohesion and climate (0.99) were high. Like the between-person level analysis, the correlation between cohesion and climate is again considerably high relative to the other two correlations. Further, there were negative correlations again between the OQ-45 and GQ variables, though correlations were only significant ($p < .05$) for cohesion (i.e., -0.58) and climate (i.e., -0.52); the correlation between OQ-45 scores and alliance (i.e., -0.17) was not statistically significant ($p = 0.54$) (Table 3). Thus, at the between-

group level of a standard multilevel analysis, the hypotheses regarding cohesion and climate were supported, but not the hypothesis regarding alliance. Importantly, because of the relatively small number of groups compared to the total number of clients, correlations are less likely to be significant at the group level. Collectively, the multilevel correlations give support for a significant negative relationship between OQ-45 scores and cohesion and climate scores at the within-person, between-person, and between group levels, while a significant negative relationship between OQ-45 scores and alliance scores was only supported at the within-person and between-person levels.

Table 3*Between-group level intercorrelations*

	Estimate	S.E.	Two-tailed p-value
Alliance			
Cohesion	0.84	0.07	<0.01
Climate	0.84	0.06	<0.01
OQ score	-0.17	0.27	0.54
Cohesion			
Climate	0.99	0.01	<0.01
OQ score	-0.58	0.24	0.02
Climate			
OQ score	-0.52	0.23	0.03

Intraclass Correlations

Meanwhile, intraclass correlations at the between-person level (indicating the amount of variability in the measures that is attributable to the person) ranged from 0.37 to 0.76, indicating that much of the variance in GQ and OQ scores is accounted for by the person (Table 4); for instance, approximately three-quarters of the variability of the OQ-45 total score among the session-to-session measurements is due to the person. Intraclass correlations at the between-group level (indicating the amount of variability in the measures that is attributable to group membership) ranged from 0.05 to 0.12. Less variability in the measures is accounted for by

group membership than the person (Table 4). Intraclass correlations for GQ scores (i.e., 0.09 for alliance, 0.11 for cohesion and 0.12 for climate) represent agreement within groups on properties or experiences of the group; correlations are small because the bulk of the variability is due to the person rather than to the group. The remaining variance for each of the variables is accounted for by session-to-session variation.

Table 4

Intraclass correlations at between-person and between-group levels

	Between-person	Between-group
Alliance	0.45	0.09
Cohesion	0.41	0.11
Climate	0.37	0.12
OQ score	0.76	0.05

Linear Growth Trajectories

The means of the linear growth trajectory random effects demonstrated significant linear effects of time ($p < .01$) for alliance (i.e., 0.02), cohesion (i.e., 0.06), climate (0.07), and the OQ-45 total score (i.e., -0.33) (Table 5). More specifically, alliance, cohesion, and climate each increased significantly over time, while OQ-45 scores showed a significant decline. For example, OQ-45 scores dropped about a third of a point per session on average. Notably, smaller estimates for alliance, cohesion, and climate when compared to the OQ-45 total score would be expected; this is because the OQ-45 total score is comprised of more items.

Table 5

Regression on time

	Estimate	S.E.	P-value
Alliance	0.02	0.01	<0.01
Cohesion	0.06	0.01	<0.01
Climate	0.07	0.01	<0.01
OQ score	-0.33	0.10	<0.01

The associations between the linear growth trajectories over time revealed that change in alliance was significantly positively associated with change in cohesion and climate scores, as well as being significantly negatively associated with changes in OQ-45 scores. In contrast, while change in cohesion had a significant positive association with change in climate scores, the negative associations of cohesion and climate change with OQ-45 score change were not statistically significant (Table 6). Therefore, in answering the final hypothesis, these analyses demonstrate that the relationship between alliance, cohesion, and climate with outcome do *not* all produce similar linear trajectories; only alliance significantly predicts improvement in outcome over time.

Table 6

Between-person covariances among linear trajectories

	Estimate	S.E.	Two-tailed p-value
Alliance			
Cohesion	0.00	0.00	0.01
Climate	0.00	0.00	0.02
OQ score	-0.02	0.01	0.02
Cohesion			
Climate	0.01	0.00	<0.01
OQ score	-0.02	0.01	0.22
Climate			
OQ score	-0.02	0.01	0.18

Finally, approximate correlations between the GQ positive bond constructs illustrated that the linear trajectories of alliance, cohesion, and climate were strongly intercorrelated; specifically, there were strong correlations between alliance and cohesion (i.e., .60), alliance and climate (i.e., .57) and cohesion and climate (i.e., .95) (Table 7). Further, there was a significant negative correlation (-.28) between the alliance linear growth and changes in OQ scores. While OQ score changes had negative associations with the linear trajectories for cohesion (-.14) and climate (-.12), these associations are not statistically significant (Table 7). These correlations

were calculated using extended precision estimates of the variances and covariances among the linear trajectory random effects that are given in Table 6.

Table 7

Approximate correlations among client-level linear trajectories

	Alliance	Cohesion	Climate	OQ Score
Alliance	1.00			
Cohesion	0.60	1.00		
Climate	0.57	0.95	1.00	
OQ score	-0.28	-0.14	-0.12	1.00

Discussion

This quantitative archival study aimed to explore the relationship between the dimensions of positive bond (i.e., alliance, cohesion, and climate) and client distress as measured through the GQ and OQ-45. Particularly, the study intended to investigate whether having stronger therapeutic relationships (indicated by higher GQ scores) is predictive of lower client distress (indicated by a lower OQ-45 total score), with an expectation that more positive client outcomes would be associated with greater positive bond at each relationship level: member-to-leader (i.e., alliance), member-to-member (i.e., cohesion), and member-to-group (i.e., climate). These stronger therapeutic relationships were expected at three levels of analysis. First, at the within-person level, which was defined as session-to-session differences from a given individual's overall mean on average alliance, cohesion, climate, and OQ-45. Second, at the between-person level, which was defined as differences between clients in their personal average alliance, cohesion, climate, and OQ-45 scores across sessions. Third, at the between-group level, which was defined as differences from group to group in their average alliance, cohesion, climate, and OQ-45 scores across sessions. Another aim of the study was to test whether alliance, cohesion, and climate equally predicted outcome over the course of group therapy. This study included

both analyses that did not take time into account (that is, all sessions were treated the same) as well as associations between the random effects of the variables' linear trajectories over time; different findings emerged according to the consideration (or the lack thereof) of time.

Regarding the hypotheses that there would be negative relationship between OQ-45 scores and the therapeutic alliance, group cohesion, and group climate GQ scores, the hypotheses were partially supported. However, this support was contingent on the level of the analysis (i.e., within-person, between-person, and between-group). In particular, at a within-person level, improvement in any of the GQ scores during a session for a given client was associated with a decrease in that's client's OQ-45 score during that session. Further, at a between-person level, clients with higher than average GQ scores would be expected to have relatively low OQ-45 scores, compared to other clients. Finally, at a between-group level, groups with high cohesion and climate scores had generally lower average OQ-45 scores; findings were not significant for alliance. In all, it seems that stronger alliance, cohesion, and climate are each associated with lower client distress when sessions across time are treated equally, though alliance was not significantly related to OQ-45 scores at the group-level. These findings are largely consistent with previous research literature and clarify previous discrepancies in the empirical literature since measure, time, treatment, therapist and group are controlled. However, it is important to note that therapist and group are perfectly confounded due to there being too few groups versus therapists to disentangle. As for why alliance was not significantly related to client distress at the group-level, one plausible explanation simply relates to the nature of alliance; the client-therapist relationship is very personal, so aggregate comparisons at the group-level may conceal positive and negative associations.

Importantly, when associations between linear growth trajectories were calculated (thereby taking time into account), only alliance had a significant negative association with changes in OQ-45 scores. This finding demonstrates that the linkage between the OQ-45 and the GQ positive bond subscale is a function of alliance; that is, alliance is more strongly related to outcome. Stated differently, the only thing that predicts symptom reduction over time (with a maximum of 12 sessions) between persons is an incremental increase of alliance with the group leader. On the other hand, cohesion and climate—while trending in the same way as alliance—do not significantly relate to improvement on the OQ. This challenges the belief in the clinical literature that a member's relationship with the group leader is less important than relationships with other members and the group-as-a-whole (Burlingame et al., 2004). Group leaders should therefore pay particular attention to member's perceptions of alliance. That is, while it is of course ideal that group members feel positive relationships with other group members and the group-as-a-whole, if the findings herein are replicated by future research, it may be that the importance of alliance should be emphasized as a source of improved outcome in group therapy.

This finding has significant implications for the group therapy research literature. For instance, in a recent review of alliance rupture, Burlingame et al. (in press) discuss how rupture can be identified on the three GQ subscales, including positive bond, positive work (i.e., “collaborative engagement of the leader, member and group in therapeutic work toward consensus treatment tasks and goals” (Burlingame et al., 2017, p. 12)), and negative relationship (i.e., “painful and unpleasant aspects of the group relationship that may adversely affect member attachments or impede the therapeutic work” (Burlingame et al., 2017, p. 12)). Further, they argue that rupture “could be associated with one or all three relationship structures” (p. 10) and that “efforts to repair rupture are likely to yield improved outcome” (p. 11). However, the results of the present study challenge this assumption by suggesting that the relationship structures do not equally predict

outcome; rather, only alliance was found to predict symptom reduction over time. Thus, if the findings herein are replicated by future research, alliance rupture on the three GQ subscales should not be assumed to be equivalent.

Again, research findings regarding alliance, cohesion, and climate have been discrepant when the constructs are studied simultaneously. Yet, the finding in the current study regarding alliance—specifically, that only alliance predicts symptom reduction over time—compliments some previous research findings. Joyce et al. (2007) and Norton and Kazantzis (2016) both found alliance to be related to outcome. Meanwhile, they reported limited findings for cohesion. Further, Cruz et al. (2020) reported largely null results when exploring the relationship between climate and outcome, as well as cohesion and outcome. However, the current findings contradict other research findings. For instance, Crowe and Grenyar (2008) found that alliance was *not* related to outcome in the treatment of depression. Notably, Crowe and Grenyar had a small sample size of 30 participants compared to 412 participants in the current study. Thus, in comparison to this analysis, Crowe and Grenyar would have far less power than the present analysis. Crowe and Grenyar also only measured the predictor variables at a single time point, which is another limitation that could influence their results.

There were a few other interesting observations, including the nature of relationships between positive bond constructs. Alliance, cohesion, and climate all demonstrated significant positive intercorrelations with each other ($p < .001$) at the within-person, between-person, and between-group levels. Collectively, this illustrates that (1) if a given client reports a GQ positive bond score that is higher than his or her personal average, other GQ positive bond scores will also likely be higher, (2) if a client reports one high GQ positive bond score, he or she would also likely other GQ positive bond scores higher than the average client, and (3) if a group has

one high GQ positive bond score, that group would also likely show high scores on other GQ relationship constructs. Further, linear growth trajectories demonstrate that alliance, cohesion, and climate follow similar linear trajectories through time (with a maximum of 12 sessions), with all three increasing significantly over time. Approximate correlations among trajectories were high among alliance, cohesion, and climate; in other words, the linear trajectories of the GQ positive bond scores are strongly intercorrelated. In all, these results suggest that positive bond scores are interconnected and tend to follow similar patterns. Given these findings, group leaders may expect that improvements in one positive bond construct can be expected to be associated with improvements in other positive bond constructs.

Another notable finding is that cohesion and climate were nearly indistinguishable in some of the analyses. Cohesion and climate demonstrated significant positive intercorrelations ($p < .01$) at the within-person (i.e., 0.73), between-person (0.94), and between-group levels (i.e., 0.99). An intercorrelation of 0.99 indicates no discriminant validity at the group-level between cohesion and climate. Further, the correlation between the cohesion and climate linear change trajectories was extremely high (0.95) and the means of the linear growth trajectory random effects were very similar for cohesion (i.e., 0.06) and climate (0.07). These results suggest that cohesion scores improved by about 0.06 points per session on average, while climate scores improved by about 0.07 points per session on average; they followed a very similar trajectory of improvement over time. This observation replicates previous findings by Johnson (2005) that member-to-member and member-to-group relationships were indistinguishable. Based on these results, group leaders should expect that scores related to cohesion and climate will tend to be very close and follow similar patterns for most clients. This may imply that group leaders can

distinguish between member-member and member-group relationships, but group members themselves are unable to disentangle those relationships.

Lastly, intraclass correlations indicated that much of the variance in GQ and OQ scores was accounted for by the person, while less variance in the measures was accounted for by group membership. In other words, variability is largely due to the person rather than the group. This finding implies that group leaders should therefore look to the client as a source of score variability, rather than the group. However, a limitation to this conclusion is that this data set has not yet been subjected to recent analytic methods that disentangle the group's effects on an individual member's score. More specifically, the Group Actor-Partner Interdependence Model (GAPIM) allows researchers to “systematically [test] several different effects of group composition for a given characteristic” and “by finding submodels of these effects... allows for empirically testing many theoretically meaningful models of differences within groups” (Garcia et al., 2015, p. 315). Therefore, this finding needs to be replicated, preferably with the use of a data set that is analyzed using GAPIM methods.

Limitations and Future Directions

Importantly, this study took place in a college counseling center setting, which limits the generalizability of findings. All clients were university students from Utah and were largely Caucasian and religious. Future research should aim to extend this research into different populations to see if findings replicate among more heterogenous group therapy contexts. Additionally, future research should explore the other two GQ subscales. Again, the GQ includes three subscale levels—positive bond, positive work, and negative relationships—which have questions related to member-to-leader, member-to-member, and member-to-group relationship dimensions. While the current study explored the relationship dimensions within positive bond,

future research could do the same with positive work and negative relationships. Readers should also note that the development of the GQ involved nearly 100 items from empathy, cohesion, climate and alliance measures being reduced to 30 items. Thus, a limitation of this study is that an identical study with the original GQ measures (i.e., the WAI, TFI-C, and GCQ) might yield different results.

Conclusions

This study addressed prior limitations by simultaneously studying alliance, cohesion, and climate together with continuous measurement, and also built upon the parent study (Burlingame et al., 2019) by disaggregating the aspects of positive bond. The study hypotheses were partially supported. Regarding the first three hypotheses (which postulated that stronger alliance, cohesion, and climate would be associated with lower client distress), there was support for both cohesion and climate at the within-person, between-person, and between group levels, while alliance was only supported at the within-person and between-person levels of a standard multilevel correlation analysis. These particular analyses aggregated sessions together without taking time into account. However, when addressing the final hypothesis regarding whether client outcome was equally predicted by the GQ positive bond constructs, different findings emerged once time was taken into account. These results demonstrate that when time is ignored, both climate and cohesion predict outcome; however, when time is taken into account, climate and cohesion do *not* predict outcome. Additional findings show that alliance, cohesion, and climate are interconnected and tend to follow similar patterns in therapy. The relationships between cohesion and climate were particularly high, demonstrating that the cohesion and climate are virtually indistinguishable. Finally, intraclass correlations indicated that much of the variance in GQ and OQ scores was accounted at the person-level and less so at the group level.

In conclusion, group leaders should particularly emphasize the importance of developing positive relationships with group members, but can expect for alliance, cohesion, and climate to typically follow similar patterns.

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