Group Dynamics: Theory, Research, and Practice
1997, Vol. 1, No. 3, 208–221

1089-2699/97/$3.00

Developmental Changes in Group Climate as They Relate to Therapeutic Gain

Dennis M. Kivlighan, Jr., and Roderick L. Lilly
University of Missouri—Columbia

Group climate development was investigated with growth curve analysis. Fifty-two participants completed a group climate questionnaire after each session and pre- and posttarget complaints. Hierarchical linear modeling identified growth patterns and related these patterns to therapeutic gain. Results revealed that groups' midcounseling levels of engaged and avoiding were significantly related to therapeutic gain. Although there were no consistent growth patterns, across all groups, for any aspect of group climate, there were specific relationships between patterns of growth in engaged and conflict and member therapeutic gain. Specifically, a high-low-high pattern of engaged, a low-high-low pattern of conflict, and a cubic pattern of avoiding were related to therapeutic gain. These findings are interpreted in terms of static versus dynamic studies of group climate.

Yalom (1995) argued that group cohesion is the group therapy analogue of the relationship in individual therapy. Cohesiveness "refers to the condition of members feeling warmth and comfort in the group, feeling they belong, valuing the group and feeling, in turn, that they are valued and unconditionally accepted and supported by the other members" (Yalom, 1995, p. 48). Although cohesion is often described as "one of the pivotal determinants of effective group therapy" (Budman et al., 1989, p. 340), the research on cohesion has produced fragmented and confusing results. There are several reasons for the problems in empirically examining cohesion. These reasons include (a) issues of definition and construct validity, (b) differences in how best to measure cohesion and analyze the resulting data, and (c) static versus dynamic conceptions of group cohesion.

Most authors agree that cohesion is but one facet of the broader, multidimensional construct of group structure or group atmosphere (Kaul & Bednar, 1986; Levine & Moreland, 1990). However, researchers have usually examined cohesion in isolation, and not as one interacting component of a multidimensional phenomenon. For example, several researchers have attempted to determine the relationship between group cohesion and member outcome (Budman et al., 1989; Kapp, Gleser, & Brissenden, 1964; Yalom, Houts, Zimerberg, & Rand, 1967; Weiss, 1972; Roether, & Peters, 1972). The results of these studies have been contradictory, with some studies showing a positive, other studies a negative, and still other studies no relationship between group cohesion and member outcome. One possible explanation for these contradictory findings is that other aspects of group atmosphere were not measured or controlled. For example, cohesion might have a different relationship to outcome in the presence of high levels of conflict than it might have when conflict is low. This suggests that when examining the relationship between cohesion and outcome, it is important to take in to account other aspects of group atmosphere. One multidimensional conception of group atmosphere is found in MacKenzie's (1983b) Group Climate Questionnaire (GCQ).

MacKenzie (1983b) posited that measures of group climate may identify features of the therapeutic environment that correspond to interpersonal events which may positively or negatively affect group members. The GCQ identifies the following three features of the group's therapeutic environment: (a) engaged (cohesion), (b) avoiding, and (c) conflict.

Dennis M. Kivlighan, Jr., and Roderick L. Lilly, Department of Educational and Counseling Psychology, University of Missouri—Columbia.

Correspondence concerning this article should be addressed to Dennis M. Kivlighan, Jr., Department of Educational and Counseling Psychology, University of Missouri, 16 Hill Hall, Columbia, Missouri 65211. Electronic mail may be sent via Internet to edcd0688@showme.missouri.edu.

Although a number of empirical studies have focused on the relation of group climate to other therapeutic factors such as members' interpersonal problems (Kivlighan & Angelone, 1992), structured group activity (Stockton, Rohde, & Haughey, 1992), and group development (McLees, Margo, Waterman, & Beeber, 1992), we could find only one study that examined the relationship between perceptions of group climate and group member outcome. Braaten (1989) showed that early ratings of higher engaged and lower avoiding were related to greater therapeutic gain on a target complaint measure. Although this result is intriguing, there are several problems with the study that create problems when trying to apply the results to other settings. These problems will be addressed later.

Although theorists agree that cohesion is a characteristic of the group, most researchers have ignored this concept when analyzing their data. For example, in the Braaten (1989) study the individual group member's ratings of group climate were correlated with their ratings of therapeutic gain. By examining his data at the level of the individual, Braaten was no longer studying the relationship between group climate and member outcome. Rather, the study became one of individual commitment and outcome (Levine & Moreland, 1990), an important but very different question.

There is disagreement concerning the best method for measuring group climate. Budman and his colleagues have developed the Group Cohesive Scale, an instrument used by trained clinical observers to rate videotapes of group therapy sessions. A more common method for measuring climate is to ask group members to evaluate their group and then aggregate these ratings to form a single index of group climate (Levine & Moreland, 1990). We believe that there are advantages to the aggregation method of defining group climate. Recall that cohesion in group therapy is seen as the analogue of relationship in individual therapy. Research in individual therapy has consistently shown that the client's perception of the relationship is more strongly related to therapy outcome than are the perceptions of relationship obtained from the therapist or outside observers. It seems reasonable therefore to use group members' perceptions of climate when examining the relationship between group climate and member outcome.

Much of the research on group cohesion and group climate has adopted a static conception of group atmosphere. In other words, researchers have attempted to examine the relationship between group climate and member outcome without taking into account the developing nature of the group. MacKenzie (1983a) asserted that the study of such group climate dimensions may directly implicate change in group process. Currently, however, the development or change over time in group climate and its relation to member change has not been directly explored. One possible reason for the relative neglect of dynamic (versus static) analyses of group climate are the methodological and statistical difficulties inherent in the analysis of change.

Francis, Fletcher, Stuebing, Davidson, and Thompson (1991) proposed that there are a number of methodological and analytical shortcomings to previous inquiries regarding change or development. Although the areas of inquiry regarding change have been numerous, Rogosa, Brand, and Zimowski (1982) and Willett (1988) suggested that there has been a characteristic tendency toward inadequate measures of change. Most empirical attempts have used the two-wave difference score or the difference between pre- and posttest scores (Arnold, 1992). Arnold (1992) noted that such conceptualization has been criticized for merely estimating amount of change rather than the process of change. Francis et al. (1991) proposed that studies of change may be benefitted, however, through the application of growth curve estimation. Using growth curve analysis, researchers may more precisely and fully estimate the structure of growth phenomena.

In the present study, we attempt to use growth curve estimation of multiwave (longitudinal) data to investigate the relationship between changes in the dimensions of group climate and group member outcome. Specifically, hierarchical linear modeling (HLM; Bryk, Raudenbush, Seltzer, & Congdon, 1988) was applied to the estimation of group climate and development. HLM consists of a set of analytic techniques that are ideally suited for studying the process of change in repeated measures studies (Kivlighan & Shaughnessy, 1995). HLM, a form of growth curve estimation, involves a series of steps in

which growth curves are modeled to individual cases. The resulting estimates then become the criterion variables estimated by interindividual variables (Arnold, 1992). Recently, HLM has been used by other researchers investigating various change-related phenomena including working alliance development (Kivlighan & Shaughnessy, 1995), cognitive functioning following closed head injury (Francis et al., 1991), and school climate development (Raudenbush, Rowan, & Kang, 1991).

In this preliminary endeavor, an attempt was made to model growth trajectories of group climate development (i.e., assess the structure of growth in the group climate construct). Specifically, we wanted to know if both the level (intercept in regression terms) and the pattern of development for engaged, avoiding, and conflict were related to member change. Given the results of research by Budman et al. (1989) and Braaten (1989), we hypothesized that higher midtreatment levels of engaged and lower midtreatment levels of avoiding would be related to the therapeutic gain from the group experience. In addition, we hypothesized that the pattern of development of the group climate dimensions of engaged, avoiding, and conflict would be related to the mean level of therapeutic gain for the group.

Research suggests that groups that go through a developmentally appropriate series of stages promote therapeutic gain in the members, but groups that are arrested in their normal development lead to therapeutic failure (Kuypers, Davies, & Van der Vegt, 1987). MacKenzie (1983b) argued that the Group Climate Questionnaire—Short Form (GCQ–S) can be used to document the stages of early to mid-group development. Specifically, Mackenzie (1983a) identified the first three stages of group development as engaged, differentiation, and individuation. The engaged stage is characterized by rising levels of engaged and relatively high levels of avoiding and low levels of conflict. In the differentiation phase, the group's climate can be described as relatively high in conflict, moderate in avoiding, and relatively low in engaged. Relatively low levels of conflict and avoiding and high levels of engaged describe the individuation stage. This information allows us to elaborate on our second hypothesis. Specifically, we hypothesized that the following growth patterns would be related to group member therapeutic gain: (a) a cubic, low-high-low-high growth pattern of engaged development; (b) a quadratic, low-high-low growth pattern of conflict development; and (c) a linear decreasing growth pattern of avoiding development. Finally, we hypothesized that for each dimension of group climate the growth pattern of climate development would account for more variance in group member therapeutic gain than would the intercept (midtreatment level of the group climate dimension).

Method

Participants

Group members. The group members were 29 male and 55 female undergraduate and graduate students enrolled in a group process class at a large Midwestern university. The students, ranging in age from 20 to 43 years ($M = 24.28$, $SD = 7.81$), participated in facilitated interpersonal process groups as a component of a course on group theories. Student participation in groups was evaluated only on the basis of attendance and was graded "satisfactory" or "unsatisfactory." The classroom instructor was not involved in the supervision or facilitation of the process groups. In addition, another instructor provided supervision to the group leaders. Such structure ensured that the confidentiality of material presented by students in groups was maintained and that students' group performance would not influence their course evaluation.

Students received pregroup training regarding group process in the form of a departmental videotape. Participants were instructed that the group's purpose was to explore the individual impact of interpersonal relations. The group leader's objective was to foster an atmosphere conducive to constructive feedback within groups. Fourteen groups were formed over the course of two semesters. Each group contained from 5 to 7 members. Group assignment was made by blocking on sex then randomly assigning the prospective member to a group. Although participation in this research was not a class requirement, all students involved in the groups participated. Statements of informed consent were obtained from participants for their involvement in this research study.

Group leaders. The groups were facilitated by graduate students in counseling psychology enrolled in a group therapy practicum. All group leaders had satisfactorily completed a group theory and a group method course prior to taking the group practicum. There were 9 female and 5 male group leaders, ranging in age from 24 to 36 years ($M = 26.82$,

SD = 4.84). Group leaders' educational status ranged from Master's to doctoral level. Although their experience varied, the majority were novices with minimal group facilitation experience. All group sessions were audio- or videotaped for use in each group leader's practicum supervision. Each leader received 1.5 hours of weekly individual supervision and 4 hours of group supervision.

Measures

GCQ–S. The GCQ–S (MacKenzie, 1983b) is a self-report measure designed to assess the perceptions of a group's therapeutic environment by individual group members. The GCQ–S, a shortened version of an original 32-item questionnaire (Group Climate Questionnaire—Long Form; GCQ–L; MacKenzie, 1981), contains 12 items rated on a 7-point Likert scale indicating extent of agreement ranging from "not at all" (0) to "extremely" (6). The GCQ–S takes approximately 5 to 10 min to complete.

The GCQ–S consists of three factor-analytically derived subscales and a single item measure, each representing a descriptive dimension of group climate. The three subscales are Engaged (5 items), Avoiding (4 items), and Conflict (2 items). There is also one item assessing anxiety which was not used. More recent literature (e.g., MacKenzie, 1990) examining the GCQ–S has identified a similar three-factor solution (also labeled engaged, conflict, and avoiding); however, the items that make up each of these factors are somewhat different. We decided to use the scales derived from the original factor structure because (a) when some of the group data were collected, the newer factor analyses had not been reported and the data had been recorded in terms of scale scores and not individual items and (b) there is substantial item overlap between the new and old factor structures and this assures that scale scores obtained from the original factor structure will correlate highly with scale scores obtained from the new factor structure. On a subset of the data used in this study the correlations between scales derived from the new and old factor structures were $r = .96$, $r = .93$, and $r = .89$ for the Engaged, Avoiding, and Conflict scales, respectively. This level of correlation suggests that scale scores from the older and newer factor analyses represent the same underlying construct. Therefore, the results of this study, although based on an older factor analysis of the GCQ–S, should be applicable to scores obtained from more recent factor analyses of the GCQ–S.

The Engaged scale, a derivation of the Engagement, Support, Disclosure, Challenge, and Cognition scales of the GCQ–L, is related to cohesion, the Rogerian dimensions, self-disclosure, cognitive understanding, and confrontation (MacKenzie, 1981). The Avoiding scale, derived from the Control scale of the GCQ–L, is related to the avoiding of responsibility by the group members in their change process (MacKenzie, 1981). The Conflict scale dimension involves interpersonal conflict and distrust. As reported by MacKenzie (1983b), the correlations among the three GCQ dimensions were $r = -.44$ for engaged and avoiding, $r = -.18$ for engaged and conflict, and $r = .30$ for avoiding and conflict.

The construct validity of the GCQ–S has been supported by studies exploring climate differences across different types of groups and different leadership styles (e.g., Kansas & Barr, 1986; MacKenzie, Dies, Coche, Rutan, & Stone, 1987). Additionally, Kivlighan and Goldfine (1991), examining student perceptions in personal growth groups, reported alpha coefficients for the three GCQ–S subscales ranging from .88 to .94.

Target Complaint form (labeled the Personal Goals Form when given to the group members). The Target Complaint (Battle et al., 1967) form completed by group members after the first and last group session asked group members to set three personal goals for their participation in the group. The open-ended form allows respondents to provide three individually tailored goals and rate their present functioning regarding these goals on a 13-point scale ranging from 13, "you're functioning at the worst possible level" to 1, "you're functioning at your highest possible." The Target Complaint form reflects a merging of qualitative and quantitative procedures that allows for the area and saliency of group members' concerns to be evaluated. Mintz and Kiesler (1982) reported a test–retest reliability of .68 for the Target Complaint form. The Target Complaint form is highly correlated with other measures of outcome (Battle et al., 1967) and has been used in a number of studies as a measure of change from individual (e.g., Pavio & Greenberg, 1995) or group (Kivlighan, in press) counseling. Braaten (1989), Budman et al. (1989), and Yalom et al. (1967) used a target complaint measure as one of the outcome measures in their studies.

Procedure

Participants filled out consent forms prior to the meeting of the first group session. All groups met for 1.5 hours twice a week. The duration of groups ranged from 14 sessions to 26 sessions. The number of group meetings varied as a function of school holidays, member or leader illness, and periodic absences by group members. Two Target Complaint forms were completed by participants at the completion of the first group session. However, participants initially rated their functioning regarding their goals only on one form. Additionally, group members were asked to complete the GCQ–S at the end of each session they attended. At termination of counseling,

all participants were asked to again rate their functioning on the second Target Complaint form.

Because we were interested in climate as a group phenomenon, the GCQ–S scores for the individual group members were aggregated for each session by averaging (calculating the mean) across all group members attending the session, for each scale (Engaged, Avoiding, Conflict). In using this type of aggregation we wanted to know if the scores for individual group members, on the three GCQ–S scales, were consistent indicators of the overall session climate. In other words, were the group climate scores consistent across the group members present in a group session? If the GCQ–S scale scores were consistent across the group members present in a session, then a reliability index calculated across these scores should be high. If, on the other hand, the GCQ–S scale scores were inconsistent (i.e., highly variable) across the group members present in a session, then a reliability index calculated across these scores should be low. A coefficient alpha for each GCQ–S scale was calculated by specifying individual group members as "items" and group sessions as occasions. From this analysis the internal consistencies for the Engaged, Avoiding, and Conflict scales were .91, .87, and .85, respectively. These high indices of reliability suggest that the group members had a highly consistent view of the individual sessions' climate. We therefore concluded that the mean or average rating of group climate in a session was a reliable indicator of the session climate for all of the group members present.

We also wanted to calculate an overall measure of success for each group studied. This measure of group success was formed in the following manner. First, for each goal statement for each member a change score was calculated by subtracting the postgoal measure from the pregoal measure. Second, the pregoal score was regressed on to the change score and the residuals from this analysis were saved. These residuals can be interpreted as adjusted change scores. Third, for each individual group member, average adjusted change scores were calculated by averaging across their three goal statements. Finally, the averaged adjusted change scores were aggregated across the members of the individual groups by averaging (calculating the mean). Therefore, each group had one score representing the average level of adjusted change for the members of that group. In using mean adjusted change scores, we wanted to know if the adjusted change scores for individual group members were consistent indicators of the overall group change score. In other words, were the adjusted change scores consistent across the group members in a group? If the Target Complaint form adjusted change scores were consistent across the group members, then a reliability index calculated across these scores should be high. If, on the other hand, the Target Complaint form adjusted change scores were inconsistent (i.e., highly variable) across the group members, then a reliability index calculated across these scores should be low. A coefficient alpha for each group's Target Complaint form adjusted change score was calculated by specifying individual group members as "items" and groups as occasions. From this analysis the internal consistency for the group level of Target Complaint form adjusted change was .86. This high index of reliability suggests that the group members had a highly consistent view of their change from the group experience. In other words, if one member of a group felt like she or he changed a lot from the experience, then her or his fellow group members were likely to also feel like they had changed a lot from the experience. Groups tended to be uniformly effective or ineffective for their members. We therefore concluded that the mean or average rating of Target Complaint form adjusted change was a reliable indicator of the Target Complaint form adjusted change for the group as a whole.

Data Analysis

Until recently, there has not been a practical and powerful method for the statistical analysis of time series, repeated measures type of process data. To represent this type of data, group researchers have used either (a) nonstatistical graphical methods, coupled with visual inspection or (b) arbitrarily divided data points into predetermined phases (i.e., early, middle, and late periods) and repeated measures analysis of variance (ANOVA) or repeated measures multivariate analysis of variance (MANOVA). As discussed by Willett, Ayoub, and Robinson (1991) and Francis et al. (1991), these methods have proven problematic from both a logical and statistical perspective. Growth modeling, also known as growth curve analysis, offers a powerful alternative method for analyzing repeated measures, group process data. In the first step of growth curve analysis, a theoretical or heuristic growth model (e.g., linear or quadratic curve) is fit to the data from individual groups and to the sample of groups as a whole. The parameters from these initial models are then used in the second step of the modeling process as outcomes (i.e., dependent variables) on to which other variables are regressed. For example, if a linear growth model is used, each group will have (a) an intercept term that represents that group's process score (e.g., engaged) at a particular point in time and (b) a slope term that represents the linear slope for change in the group's process score (e.g., engaged) over time.

Growth modeling has been typically applied to outcome data. Only Kivlighan and Shaughnessy (1995) have used growth modeling with process data. In this study, hierarchical linear modeling (HLM) was

used to estimate growth curves from the nested aggregated GCQ–S scores. Based on the theory of hierarchical linear models developed by Bryk and Raudenbush (1992), HLM can be used in a two-level analysis to estimate growth curves from the within-group GCQ–S data and to relate the growth parameters from this within-group analysis to the between-group variable of "group success."

Conceptually, HLM involves a two-stage analysis. In the first or *unconditional* model, the growth trajectory of each individual group is modeled or characterized by a unique set of parameters. These sets of parameters, which are assumed to vary randomly, are then used in the second or *conditional* model as dependent variables in a series of regressions. Arnold (1992) has summarized this analytic technique by describing HLM as "regressions of regressions" (p. 61).

HLM differs from trend analysis in ANOVA or MANOVA in that individuals are being modeled, as opposed to group means (i.e., in trend analysis individual variance is subsumed under the error term). Variance in the individual growth parameters (i.e., across groups) can then be plotted against correlates of change. Specifically, this type of analysis allows for "a different set of research questions" (Francis et al., 1991, p. 31) than is found in more traditional research (i.e., based on group means only). In the present study, we investigated how the shape or function of individual group climate growth patterns were related to the amount of participant-rated benefit from the group experience. For a detailed discussion of the statistical aspects of hierarchical linear models, readers are referred to Arnold (1992), Bryk and Raudenbush (1992), and Francis et al. (1991).

The HLM analyses were run three times, once for each of the three group climate variables (engaged, conflict, and avoiding) as a criterion variable. In the following descriptions the term "group climate" will be used to describe one of the three GCQ scales (Engaged, Conflict, and Avoiding). Examination of the relationship between group climate ratings and group benefit proceeded through a series of model building steps. The simplest model in an HLM design is the "unconditional growth model." In the unconditional growth model, each group's pattern of group climate change was represented by an individual growth model that had a unique set of parameters. In the present study, the initial unconditional growth model had two parameters: an intercept (which is also referred to as the "base" in HLM terminology) and a linear term. These two parameters correspond to the constant and regression coefficient in ordinary, unstandardized regression analysis. In the second step of our unconditional model building, a quadratic term was added to see if this accounted for additional variability in group climate change, and finally a cubic term was added to the unconditional model.

The "Level 1" completely unconditional model for Group i's group climate at Time t (group midpoint) is

$$y_{ti} = \beta_{00} + e_{0i}, \tag{1}$$

where y_{ti} is the observed group climate for Group i at Time t; β_{00} represents mean level of group climate for Group i. The "Level 2" completely unconditional model is

$$\beta_{00} = \gamma_{000} + \upsilon_{00j}, \tag{2}$$

where γ_{000} represents overall mean initial level of group climate (for all groups).

The "Level 1" individual growth model, with the linear and quadratic terms, for Group i's group climate at Time t (group midpoint) is

$$y_{ti} = \beta_{00} + \beta_{10}(\text{Session})_{ti} + \beta_{20}(\text{Session})^2_{ti} + e_{0i}, \tag{3}$$

where y_{ti} is the observed group climate for Group i at Time t; β_{00} represents mean level of group climate for Group i; β_{10} represents the linear rate of change in group climate for Group i; and β_{20} represents the mean quadratic rate of change in group climate for Group i, and e_{0i} represents the randomly distributed error of prediction across time periods.

The "Level 2" growth model is

$$\beta_{00} = \gamma_{000} + \upsilon_{00j} \tag{4}$$

$$\beta_{10} = \gamma_{100} + \upsilon_{10j} \tag{5}$$

$$\beta_{20} = \gamma_{200} + \upsilon_{20j}, \tag{6}$$

where γ_{000} represents overall mean initial level of group climate (for all groups), γ_{100} represents the overall mean linear rate of change in group climate, and γ_{200} represents the overall mean quadratic rate of change in group climate.

The conditional model at "Level 2" consists of separate equations (one for base, one for linear change in group climate, and one for quadratic change in group climate) examining how group benefit relates to the midgroup level of group climate, the linear change in group climate, and the quadratic change in group climate. Specifically the "Level 3" model was

$$\beta_{00}(\text{midgroup level of group climate}) = \gamma_{000} + \gamma_{001}(\text{benefit}) + \upsilon_{00j} \tag{7}$$

$$\beta_{10}(\text{Linear change in group climate}) = \gamma_{100} + \gamma_{101}(\text{benefit}) + \upsilon_{10j} \tag{8}$$

$$\beta_{20j}(\text{Quadratic change in group climate}) = \gamma_{200} + \gamma_{201}(\text{benefit}) + \upsilon_{20j}, \quad (9)$$

where γ_{001}, γ_{101}, and γ_{201} represent the effect of the group benefit on the midgroup level and linear and quadratic change in group climate. The goal in using the HLM program is to estimate these three gamma coefficients for each of the three dimensions of group climate.

Results

Initially the Target Complaint form data were examined to provide a description of the extent of individual change that resulted from the group experience. The average pretest to posttest change score for the group members in this sample was −3.3 (*SD* = 0.9). This suggests that group members found their groups helpful in reducing their target complaint distress. It is also important to note that no group member indicated that his or her target complaint distress was greater at posttest than it was at pretest.

Completely Unconditional Models

Completely unconditional models were initially examined to determine the average level, indicated by a gamma *intercept coefficient* (γ_{000}), of the three GCQ–S dimensions at the midpoint of group counseling. In addition, a sigma squared statistic (Σ^2; the proportion of group climate variance that was between sessions) and a parameter variance estimate, indicated by *tau* (τ; the proportion of group climate variance that was between groups), were examined and used to determine the percentage of GCQ–S variance that was within groups (i.e., between group sessions) ($\Sigma^2/\Sigma^2 + \tau$) and that which was between groups ($\tau/\Sigma^2 + \tau$).

The gamma coefficient that represents the estimated population engaged score at the midpoint of group counseling was 2.77. This suggests that group members, on the average, saw their groups as moderately engaged at the midpoint of group counseling. The Σ^2 value for the engaged dimension indicated that the amount of within-group (between-session) variance was .352, while tau indicated that the between-group variance in engaged was .100. Therefore, approximately 78% of the variance in engaged was attributable to between-session development and the remaining variance, 22%, attributable to between-group variation. A significant chi-square statistic, $\chi^2(13, N = 14) = .099$, $p = .001$, associated with the tau coefficient for the intercept indicated that there was substantial variation in engaged across groups at the midpoint of counseling.

The gamma coefficient for the avoiding score at the midpoint of group counseling was 2.36. This suggests that group members saw their groups as between somewhat and moderately avoiding at the midpoint of group counseling. The Σ^2 value for the avoiding dimension indicated that the amount of within-group (between-session) variance was .559 while tau indicated that the between-group variance in avoiding was .521. Therefore, approximately 52% of variance in avoiding was attributable to between-session development and the remaining variance, 48%, was attributable to between-group variation in avoiding. A significant chi-square statistic, $\chi^2(13, N = 14) = 319.16$, $p < .001$, associated with the tau coefficient for the intercept, indicated that there was substantial variation in engaged across groups at the midpoint of counseling.

The gamma coefficient for the conflict score at the midpoint of group counseling was 1.44. This suggests that group members saw their groups as between a little and somewhat in terms of conflict at the midpoint of group counseling. The Σ^2 value for the conflict dimension indicated that the amount of within-group (between-session) variance was .942, while tau indicated that the between-group variance in conflict was .328. Therefore, approximately 74% of variance in conflict was attributable to between-session development and the remaining variance, 26%, was attributable to between-group variation in conflict. A significant chi-square statistic, $\chi^2(13, N = 14) = 127.91$, $p < .001$, associated with the tau coefficient for the intercept, indicated that there was substantial variation in conflict across groups at the midpoint of counseling.

Unconditional Models

The first stage of the analysis revealed that there was significant variation in intercepts (i.e., midtreatment scores) in engaged, avoiding, and conflict among the groups in the sample. The next stage of the analysis involved introducing growth terms into the models to depict the

structure of change in the dimensions of group climate over the course of counseling. Within-unit data were used at this point in producing such growth curves. Hence, linear, quadratic, and cubic growth terms were examined for appropriateness in depicting growth in the GCQ–S dimensions. It is important to note that these unconditional models involved the sample as a whole. In other words, would a particular growth pattern in engaged (or avoiding or conflict) describe all 14 of the groups that we examined? For engaged, the linear, quadratic, and cubic growth models did not provide a good fit for the 14 groups as a whole. Specifically, the linear, quadratic, and cubic growth models for engaged accounted for only 4%, 3%, and 2%, respectively, of the within-group (between-session) variance in engaged. The chi-squared statistic associated with the variance components derived from the unconditional models describe whether or not there is enough variance in the growth terms (i.e., linear slope, quadratic slope, cubic slope) to proceed to the conditional models. For engaged, nonsignificant chi-squares for the linear and cubic slope terms indicated that there was not enough between-group variance in linear or cubic slopes to proceed to a conditional model. There was, however, significant between-group variance in the quadratic slope term, $\chi^2(13, N = 14) = 30.62$, $p < .01$. Therefore, in the conditional model, we examined the relationship between the intercept (midtreatment score) and quadratic growth term for engaged and therapeutic gain from the group.

For avoiding, the linear, quadratic, and cubic growth models did not provide a good fit for the 14 groups as a whole. Specifically, the linear, quadratic, and cubic growth models for engaged accounted for only 14%, 1%, and 2%, respectively, of the within-group (between-session) variance in engaged. This suggests that there was a nonsignificant trend for the groups as a whole to linearly decrease their level of avoiding over time. As noted previously, we examined the chi-squared statistics associated with the growth terms (i.e., linear slope, quadratic slope, cubic slope) to see if there was enough between-group variance to proceed to the conditional models. For avoiding there were nonsignificant chi-squares for the linear and quadratic slope terms indicating that there was not enough between-group variance in linear quadratic slopes to proceed to a conditional model. There was, however, significant between-group variance in the cubic slope term, $\chi^2(13, N = 14) = 19.00$, $p < .05$. Therefore, in the conditional models, we examined the relationship between the intercept (midtreatment score) and the cubic growth term for avoiding and therapeutic gain from the group.

For conflict, the linear, quadratic, and cubic growth models did not provide a good fit for the 14 groups as a whole. Specifically, the linear, quadratic, and cubic growth models for engaged accounted for only 7%, 1%, and 1%, respectively, of the within-group (between-session) variance in engaged. As noted previously, we examined the chi-squared statistics associated with the growth terms (i.e., linear slope, quadratic slope, cubic slope) to see if there was enough between-group variance to proceed to the conditional models. For conflict, nonsignificant chi-squares for the linear and cubic slope terms indicated that there was not enough between-group variance in linear or cubic slopes to proceed to a conditional model. There was, however, significant between-group variance in the quadratic slope term, $\chi^2(13, N = 14) = 21.51$, $p < .05$. Therefore, in the conditional models, we examined the relationship between the intercept (midtreatment score) and quadratic growth term for conflict and therapeutic gain from the group.

Conditional Models

The final stage of the analyses involved estimating models to account for the variance in within-unit development (i.e., intercept and growth parameters). In other words, the outcome variable, overall therapeutic gain, was introduced to account for variance in (a) the midtreatment level of each GCQ–S dimension and (b) the quadratic growth terms for engaged and conflict and the linear and cubic growth terms for avoiding. The results of these conditional models can be found in Tables 1 and 2.

A significant t test for the engaged intercept, $t(1, 13) = -2.77$, $p < .05$, indicated that therapeutic gain and midtreatment engaged were significantly related. Therapeutic gain accounted for approximately 40%, $(.099 - .061)/.099$, of the parameter variance in midtreatment engaged and 9% $(.40 \times .22)$ of the total variance. The chi-square statistic suggested,

however, that there was considerable unexplained variance remaining in intercept (midtreatment score) for engaged, $\chi^2(13, N = 14) = 59.86, p < .001$. There was also a significant t test, $t(1, 13) = -2.72, p < .05$, for the quadratic slope term, indicating that therapeutic gain and the high-low-high pattern of engaged development were significantly related. Therapeutic gain accounted for approximately 79%, (.277 − .057)/.277, of the parameter variance in engaged and 17% (.79 × .22) of the total variance in engaged. A chi-square statistic suggested that there was no significant unexplained variance remaining in quadratic slope for engaged. A t test, $t(1, 13) = 2.83, p < .05$, revealed that therapeutic gain and the quadratic slope for engaged shared significantly more variance than did therapeutic gain and the intercept (midtreatment level) of engaged. These results provide partial support for our hypotheses. Contrary to our hypothesis, a cubic pattern, low-high-low-high, of engaged development was not related to therapeutic gain. Rather, a quadratic pattern, high-low-high, of engaged development provided a better explanation of therapeutic gain. As hypothesized, however, the growth pattern for engaged development accounted for more of the variance in therapeutic gain than did the static midtreatment measure of engaged.

Table 1
Estimated Effects for the Final Conditional Models for Engagement, Avoidance, and Conflict

Fixed effect	γ	*SE*	*t*
Cubic model for engagement			
Midtreatment intercept	2.57	0.10	24.82**
Outcome coefficient	0.01	0.00	−2.77*
Growth parameter	0.26	0.24	1.08
Outcome coefficient	0.01	0.00	−2.72*
Quadratic model for avoidance			
Midtreatment intercept	2.36	0.10	24.19**
Outcome coefficient	0.01	0.001	6.43**
Growth parameter	−0.04	0.21	−0.20
Outcome coefficient	0.01	0.00	2.18*
Quadratic model for conflict			
Midtreatment intercept	1.70	0.92	1.86
Outcome coefficient	0.01	0.00	1.72
Growth parameter	0.53	0.38	1.39
Outcome coefficient	0.01	0.00	2.25*

Note. Outcome is the adjusted change score from the target complaint ratings. Higher scores on this variable reflect a better counseling outcome. Group climate dimensions were scored on a scale of 1 (not at all) to 6 (extremely).
*$p < .05$. **$p < .001$.

Table 2
Variance Components for the Final Conditional Models for Engagement, Avoidance, and Conflict

Random effects	Variance component	*df*	χ^2
Cubic model for engagement			
Variance in midtreatment intercepts	0.06	12	59.86**
Variance in growth parameter	0.06	12	11.91
Within-subject variance	0.34		
Quadratic model for avoidance			
Variance in midtreatment intercepts	0.11	12	57.19**
Variance in growth parameter	0.08	12	9.75
Within-subject variance	0.34		
Quadratic model for conflict			
Variance in midtreatment intercepts	0.28	12	102.26**
Variance in growth parameter	0.09	12	10.93
Within-subject variance	0.93		

Note. Outcome is the adjusted change score from the target complaint ratings. Higher scores on this variable reflect a better counseling outcome. Group climate dimensions were scored on a scale of 1 (not at all) to 6 (extremely).
**$p < .001$.

A significant t test for the avoiding intercept, $t(1, 13) = 6.43, p < .05$, indicated that therapeutic gain and midtreatment avoiding were significantly related. Therapeutic gain accounted for approximately 80%, (.524 − .108)/.524, of the parameter variance in midtreatment avoiding and 38% (.80 × .48) of the total variance in avoiding. The chi-square statistic suggested, however, that there was still a significant amount of unexplained variance remaining in intercept (midtreatment score) for avoiding, $\chi^2(13, N = 14) = 57.19, p < .001$. There was a significant t test, $t(1, 13) = 2.18, p < .05$, for the cubic slope term, indicating that therapeutic gain and high-low-high-low pattern of avoiding development were significantly related. Therapeutic gain accounted for approximately 71%, (.677 − .077)/.267, of the parameter variance in engaged and 34% (.71 × .48) of the total variance in avoiding. The chi-square statistic associated with the cubic growth term

suggested that there was no significant unexplained variance remaining in cubic slope for avoiding. A t test revealed that there was no difference in the variance shared by therapeutic gain and the cubic slope for avoiding and therapeutic gain and the intercept (midtreatment level) of avoiding, $t(1, 13) = 1.23$, $p > .05$. These results were contrary to our hypotheses. First, the linearly decreasing pattern of avoiding development was not related to therapeutic gain. Rather, a cubic, high-low-high-low pattern of avoiding development provided a better explanation of therapeutic gain. Second, the growth pattern for avoiding development did not account for more of the variance in therapeutic gain than did the static midtreatment measure of avoiding.

A nonsignificant t test, $t(1, 13) = 1.86$, $p > .05$, for the conflict intercept indicated that therapeutic gain and the midtreatment level of conflict were not related. Therapeutic gain accounted for approximately 15%, (.329 − .280)/.329, of the parameter variance in midtreatment conflict and 4% (.15 × .26) of the total variance in conflict. The chi-square statistic showed that there was considerable unexplained variance remaining in intercept (midtreatment score) for conflict, $\chi^2(13, N = 14) = 102.26$ $p < .001$. There was, however, a significant t test, $t(1, 13) = 2.25$, $p < .05$, for the quadratic slope term, indicating that therapeutic gain and the low-high-low pattern of conflict development were significantly related. Therapeutic gain accounted for approximately 64%, (.239 − .087)/.239, of the parameter variance in midtreatment conflict and 17% (.64 × .26) of the total variance in conflict. The nonsignificant chi-square statistic suggested that there was no significant unexplained variance remaining in quadratic slope for conflict. A t test, $t(1, 13) = 2.67$, $p < .05$, revealed that therapeutic gain and the quadratic slope for conflict shared significantly more variance than did therapeutic gain and the intercept (midtreatment level) of conflict. These results provide support for our hypotheses. As hypothesized, a quadratic, low-high-low pattern of conflict development was related to therapeutic gain. Also as hypothesized, the growth pattern for conflict development accounted for more of the variance in therapeutic gain than did the static midtreatment measure of conflict.

One methodological explanation for these results involves the differing lengths of the groups. A group that only meets for 14 sessions has its last session at about the midpoint of a group that meets for 26 sessions. These differing group lengths might account for the different development patterns found in the study. In other words, the absolute session number may be more important than the relative session number. To examine this alternate hypothesis, the HLM analyses were rerun with number of sessions modeled as a between-group variable. In no instance (engaged, avoiding, or conflict analysis) did the number of sessions have a statistically significant relationship with the intercept, the linear slope, or the quadratic slope. This indicates that group length did not influence the results. Specifically, the relative placement of a session within a series of group sessions seems to be more important than its absolute session number. Within limits, groups of differing session lengths seem to follow similar developmental patterns. Finally, we examined the possibility that group length was related to aggregated group outcome. A Pearson correlation revealed no statistically significant relationship between group length and aggregated group outcome, $r = .12$, $p > .05$.

Discussion

These preliminary findings suggest that both the midtreatment level of cohesion (engaged) and the pattern of cohesion development are significant predictors of therapeutic gain. In addition, the midtreatment level (avoiding) and pattern of development (avoiding and conflict) of other group climate variables are related to therapeutic gain. These results serve to confirm and extend the theory and research on cohesion.

MacKenzie (1983b) argued that the Engaged scale of the GCQ captured many of the elements of cohesion described by Yalom (1995). The relationship between the midtreatment level of engaged (cohesion) and therapeutic gain is similar to the relationship between cohesion and outcome found in research by Budman et al. (1989); Braaten (1989); and Yalom et al. (1967). Taken together, these three studies suggest that cohesion or engaged has a small-to-moderate impact on group outcome. As in individual therapy, in which a positive relationship, specifically the working alliance, has been shown to be related to outcome, in group a network of these

positive relationships probably serves the same function. In fact, Budman et al. (1989) found that cohesion and working alliance were related constructs. Group leaders should therefore look for ways to increase the cohesiveness and engagement of their group. Levine and Moreland (1990) suggested that this can be done by encouraging expressions of warmth and acceptance among group members or by serving as targets for the group members' projective identification.

Our results suggest that the level of cohesiveness may not, however, be the most important static indicator of therapeutic gain. Specifically, the midtreatment level of avoiding showed a large relationship with therapeutic gain, with lower avoiding scores being associated with more therapeutic gain. This replicates the results of the Braaten (1989) study which also showed that one-time measures of avoiding were related to therapeutic gain. According to MacKenzie (1983b), the Avoiding scale indicates the group members' reluctance to deal with the personal or interpersonal problems that arise in the group. We believe that avoiding may be the group analogue of resistance in individual therapy. As resistance is not just the absence of a working alliance, avoiding is not merely the lack of cohesion. In fact, cohesion can foster avoiding as is the case in "group think" (Janis, 1982). Our results suggest that group leaders need to help the group members overcome their avoiding. Unfortunately, as in the individual therapy literature on dealing with resistance, there is virtually no research that addresses the relationship between group leader behavior and group member avoiding.

Finally, it is important to note the midtreatment level of group conflict was unrelated to therapeutic gain. This suggests that conflict, per se, neither enhances nor detracts from therapeutic gain. Several authors (e.g., MacKenzie, 1983b) suggest that it is how the group conflict is handled that determines the consequences of the conflict. For example, if the conflict is unresolved, it can lead to increased avoiding in the group. On the other hand, conflict promotes the challenging of defenses and can lead to further member self-disclosure (MacKenzie, 1983b).

Although the results involving the static measures of group climate are interesting, the main focus of the present study was to examine the relationship between changes over time in group climate and therapeutic gain. We used MacKenzie's (1983b) model of group development to formulate several hypotheses about the relationship between changes over time in group climate and therapeutic gain. Specifically, we hypothesized that when groups follow an optimal developmental sequence, outcome is enhanced.

Only one of our hypotheses linking specific patterns of group climate development to therapeutic gain was supported by the data. As hypothesized, when conflict followed a low-high-low pattern of development, therapeutic outcome was enhanced. This pattern of conflict development suggests that groups must have an initial period of time in which there is relatively little conflict. The lack of conflict in early sessions probably allows for an initial establishment of cohesion. More conflict is important later in group; as MacKenzie (1983b) speculated, this conflict is probably necessary for challenging defenses and deepening self-disclosure. Finally, the data indicate that for successful outcome, this conflict must be resolved and reduced later in the group's development.

Based on MacKenzie's (1983a) model, we predicted that a cubic pattern of engaged development would be related to therapeutic gain. MacKenzie (1983b) suggested that engaged or cohesion increased slowly during the initial, engaged, phase of group development, dropped during the differentiation stage, and then was restored during the individuation phase. Our results suggest that engaged development follows a simpler quadratic high-low-high pattern. Rather than building during the initial phase of group development, as suggested by MacKenzie (1983b), engaged starts high and remains high during this initial phase. Writing about the working alliance, the individual therapy analogue of cohesion, Bordin (1994) suggested that for many relatively healthy clients the working alliance is established within the first session. Therefore, there is no building of the alliance over the initial phase of therapy. Research on the working alliance in individual treatment supports Bordin's position, showing a high-low-high pattern of alliance development (Shaughnessy & Kivlighan, in press), with no initial stage of alliance increase. It is important

to note that our group members were relatively healthy, focusing on personal growth as opposed to pathological goals. The low-high-low-high cubic pattern of engaged development in group therapy and alliance development in individual therapy may only occur with more disturbed clients who have difficulty in initiating relationships. Future research could compare the pattern of cohesion and engagement development in groups with more healthy clients to groups with clients with more personality pathology.

MacKenzie's (1983b) writings suggested that the avoiding dimension would follow a simple linearly decreasing pattern of development across the first three stages of the group's life. In support of this linear model of avoiding development, research on resistance, the individual analogue of avoiding, showed that a linearly decreasing pattern of resistance was related to therapeutic outcome. The relationship between avoiding development and therapeutic gain found in this study involved a complex, cubic pattern of avoiding development. Avoiding started relatively high, decreased during the first phase (engaged) of group development, increased during the differentiation phase, and decreased again during the third, individuation, phase of group development. At this time we are not sure why resistance would follow a simple linearly decreasing pattern in individual counseling but avoiding follows a complex cubic pattern of development in group therapy.

One of the major purposes in conducting this study was to compare static and dynamic approaches for modeling group climate in their ability to predict therapeutic gain. For engaged (cohesion) and conflict, the growth models explained significantly more of the variance in therapeutic gain than did the intercept coefficients. For avoiding, the growth models and the intercept coefficient explained an equivalent amount of variance in therapeutic gain. Taken together, these results suggest that it is more important to understand the pattern of development of group climate than to know the absolute level of engaged, avoiding, or conflict at any one point in time. This conclusion has important implications for both group researchers and group practitioners.

For researchers, it is important to move beyond simple static measures of group climate. Although one-time measures of group climate are easy to collect and analyze, they provide a very limited view of the dynamic processes that lead to therapeutic gain. One reason that researchers may not collect repeated measures data is the complexity in analyzing multiple measures of group climate taken over time. Growth modeling, as operationalized by HLM, can provide a powerful means for modeling this type of repeated measures data. These preliminary findings suggest that the hierarchical linear modeling technique may be a useful method for investigating development in group climate. By reducing the multiple repeated measures of group climate to a more parsimonious set of growth parameters, the researcher can relate complex concepts like development to measures of outcome.

The clinician has not only to track weekly level of group climate but also to be able to "step back" and see the gestalt of group climate development. In addition, to ensure therapeutic gain, group leaders have to assure that their group follows an optimal pattern of development. Group development theory seems to assume that all groups follow a standard pattern of developmental progression. This was not the case for the 14 groups in this study. There was no single growth model that could adequately describe the development of engaged, avoiding, or cohesion for all 14 groups. In other words, there were substantial between-group differences in the pattern of group climate development. Therapeutic gain was highest in groups that followed specific developmental patterns, high-low-high for cohesion, high-low-high-low for avoiding, and low-high-low. How do group leaders make sure that their group follows an optimal group climate development pattern? Unfortunately, there is virtually no research that addresses the impact of the group leader on the development of group climate. This seems like a critical arena for future group research.

It is important to address some of the limitations of the study. First, the results are correlational, therefore it is impossible to draw any type of causal ordering. Second, because these results are based on self-report measures, it is possible that the findings reflect the operation of monomethod bias (Campbell & Fiske, 1958). For example, it would be possible to obtain measures of group climate from ratings of outside observers. Likewise, other perspectives could be tapped when assessing group member outcome. The findings also reflect the

operation of mono-operation bias (Campbell & Fiske, 1958). The study would be strengthened by the addition of multiple measures of the group climate and outcome dimensions.

It is also important to note that the group members in this study were students fulfilling a course requirement. How the group members identified and rated their target complaints and rated the group climate could have been affected by their student role. For example, it is likely that students enrolled in this type of class would have less severe target complaints than members of psychotherapy groups. Because our group members may have experienced less severe interpersonal problems, there was likely reduced variability in the target complaint data. In fact, no group member indicated that their target complaints had gotten worse over the course of the group experience. This reduced variability would, however, act to attenuate the relationship between group climate development and group counseling outcome. Nevertheless, it would be important to attempt to replicate these results with clients in psychotherapy groups. Finally, the results are based on a small sample of groups. These results need to be replicated with larger samples.

The results of this study clearly show that the pattern of group climate development has an important relationship to therapeutic gain. There is, unfortunately, little theory or research about the role of the group leader on group climate development. The challenge for group leaders and their trainers is to discover how to positively influence group climate development. Dies (1983) suggested that instrumented feedback could be used to alert leaders to potential problems. Leaders may not be aware of the developmental pattern of group climate development in their groups' input from their group members and the systematic tracking of this type of data. Future research could address the factors that affect group climate development.

References

Arnold, C. L. (1992). Methods, plainly speaking: An introduction to hierarchical linear modeling. *Measurement and Evaluation in Counseling & Development, 25,* 58–89.

Battle, C. C., Imber, S. D., Hoehn-Saric, R., Stone, A. R., Nash, E. R., & Frank, J. D. (1967). Target complaints as criteria of improvement. *American Journal of Psychotherapy, 21,* 184–192.

Bordin, E. S. (1994). Theory and research on the therapeutic working alliance: New directions. In A. O. Horvath & L. S. Greenberg (Eds.), *The working alliance: Theory, research and practice* (pp. 13–37). New York: Wiley.

Braaten, L. J. (1989). Predicting positive goal attainment and symptom reduction from early group climate dimensions. *International Journal of Group Psychotherapy, 39,* 377–387.

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analytic methods.* Newbury Park, CA: Sage.

Bryk, A. S., Raudenbush, S. W., Seltzer, M., & Congdon, R. T., Jr. (1988). *An introduction to HLM: Computer program user's guide* (2nd ed.) Chicago: University of Chicago, Department of Education.

Budman, S. H., Soldz, S., Demby, A., Feldstein, M., Springer, T., & Davis, M. S. (1989). Cohesion, alliance and outcome in group psychotherapy. *Psychiatry, 52,* 339–350.

Campbell, D. T., & Fiske, D. W. (1958). Convergent and discriminant validation by the multitrait–multimethod matrix. *Psychological Bulletin, 56,* 81–105.

Dies, R. R. (1983). Clinical implications of research on leadership in short-term group psychotherapy. In R. R. Dies & K. R. MacKenzie (Eds.), *Advances in group psychotherapy: Integrating research and practice* (pp. 27–75). Madison, CT: International Universities Press.

Francis, D. J., Fletcher, J. M., Stuebing, K. K., Davidson, K. C., & Thompson, N. M. (1991). Analysis of change: Modeling individual growth. *Journal of Consulting and Clinical Psychology, 59,* 27–37.

Janis, I. L. (1982). *Group think* (2nd ed.). Boston: Houghton Mifflin.

Kansas, N., & Barr, M. A. (1986). Process and content in a short-term inpatient schizophrenic group. *Small Group Behavior, 17,* 355–363.

Kapp, F. T., Gleser, G., & Brissenden, A. (1964). Group participation and self-perceived personality change. *Journal of Nervous and Mental Disease, 139,* 255–265.

Kaul, T., & Bednar, R. (1986). Research on group and related therapies. In S. Garfield and A. Bergin (Eds.), *Handbook of psychotherapy and behavior change.* New York: Wiley.

Kivlighan, D. M., Jr. (in press). Leader behavior and therapeutic gain: An application of situational leadership theory. *Group Dynamics: Theory, Research, and Practice.*

Kivlighan, D. M., Jr., & Angelone, E. O. (1992). Interpersonal problems: Variables influencing participants' perception of group climate. *Journal of Counseling Psychology, 39,* 468–472.

Kivlighan, D. M., Jr., & Goldfine, D. C. (1991).

Endorsement of therapeutic factors as a function of stage of group development and participant interpersonal attitudes. *Journal of Counseling Psychology, 38,* 150–158.

Kivlighan, D. M., Jr., & Shaughnessy, P. (1995). Analysis of the development of the working alliance using hierarchical linear modeling. *Journal of Counseling Psychology, 42,* 338–349.

Kuypers, B. C., Davies, D., & Van der Vegt, R. (1987). Training group development and outcomes. *Small Group Behavior, 18,* 309–335.

Levine, J. M., & Moreland, R. L. (1990). Progress in small group research. In J. T. Spence (Vol. Ed.), *Annual review of psychology* (Vol. 41, pp. 585–634). Palo Alto, CA: Annual Reviews.

MacKenzie, K. R. (1981). Measurement of group climate. *Journal of Group Psychotherapy, 31,* 287–296.

MacKenzie, K. R. (1983a). A developmental model for brief group therapy. In R. R. Dies & K. R. MacKenzie (Eds.), *Advances in group psychotherapy: Integrating research and practice* (pp. 101–116). Madison, CT: International Universities Press.

MacKenzie, K. R. (1983b). The clinical application of a group climate measure. In R. R. Dies & K. R. MacKenzie (Eds.), *Advances in group psychotherapy: Integrating research and practice* (pp. 159–170). Madison, CT: International Universities Press.

MacKenzie, K. R. (1990). *Introduction to time-limited group psychotherapy.* Washington, DC: American Psychiatric Press.

MacKenzie, K. R., Dies, R., Coche, E., Rutan, J. S., & Stone, W. N. (1987). An analysis of AGPA Institute groups. *International Journal of Group Psychotherapy, 37,* 55–74.

McLees, E., Margo, G. M., Waterman, S., & Beeber, A. (1992). Group climate and group development in a community meeting on a short term inpatient psychiatric unit. *Group, 16,* 18–30.

Mintz, J., & Kiesler, D. J. (1982). Individualized measures of psychotherapy outcome. In P. C. Kendall & J. N. Butcher (Eds.), *Handbook of research methods in clinical psychology* (pp. 491–534). New York: Wiley.

Pavio, S. C., & Greenberg, L. S. (1995). Resolving "unfinished business": Efficacy of experiential therapy using empty-chair dialogue. *Journal of Consulting and Clinical Psychology, 63,* 419–425.

Raudenbush, S. W., Rowan, B., & Kang, S. J. (1991). A multilevel, multivariate model for school climate with estimation via the EM algorithm and application to US high school data. *Journal of Educational Statistics, 16,* 295–330.

Roether, H. A., & Peters, J. J. (1972). Cohesiveness and hostility in group psychotherapy. *American Journal of Psychiatry, 128,* 1014–1017.

Rogosa, D. R., Brand, D., & Zimowski, M. (1982). A growth curve approach to the measurement of change. *Psychological Bulletin, 90,* 726–748.

Shaughnessy, P., & Kivlighan, D. M. (in press). Temporal dimensions of the working alliance: A cluster analytic typology of clients' working alliance ratings. *Psychotherapy Research.*

Stockton, R., Rohde, R. I., & Haughey, J. (1992). The effects of structured group exercises on cohesion, engagement, avoidance, and conflict. *Small Group Research, 23,* 155–168.

Weiss, B. J. (1972). Development of cohesiveness in marathon growth groups. *Dissertation Abstracts International, 32,* 6065-B.

Willett, J. B. (1988). Questions and answers in the measurement of change. In E. Rothkopf (Ed.), *Review of research in education* (1988–1989) (pp. 345–422). Washington, DC: American Educational Research Association.

Willett, J. B., Ayoub, C. C., & Robinson, D. (1991). Using growth modeling to examine systematic differences in growth: An example of change in the functioning of families at risk of maladaptive parenting, child abuse, or neglect. *Journal of Consulting and Clinical Psychology, 59,* 38–47.

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

Yalom, I. D., Houts, P. S., Zimerberg, S. M., & Rand, L. (1967). Prediction of improvement in group psychotherapy. *Archives of General Psychiatry, 17,* 159–168.