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Between-Client and Within-Client Engagement and Outcome in a Residential Wilderness Treatment Group: An Actor Partner Interdependence Analysis

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We examine aspects of engagement (MacKenzie, 1983) as predictors of longitudinal change in Outcome Questionnaire-45.2 scores (Lambert, Kahler, Harmon, Burlingame, & Shimokawa, 2011) for 68, 18–24-year-old male residents in a 10-bed, open enrollment 90-day residential, substance use treatment program. Engagement was partitioned into within-member, between-member, within-other members, and between-other members' effects. Within-member engagement represented how a group member's score for a week deviated from that member's average engagement score (across all weeks), whereas between-member engagement was the member's average engagement score. Similarly, within-other member engagement represented how the other group members' scores for a week deviated from the other group members' average engagement score (across all weeks), whereas between-other member engagement was the other group members' average engagement score. A 2-level hierarchical linear model showed the interaction of between-member engagement and between-other member engagement was related to decreasing OQ-45 scores. When other group members generally saw the group as more engaged, higher group member average engagement ratings were related to improvement. There was a significant interaction between within-member engagement and between-member engagement in predicting OQ-45 scores. When clients generally saw the group as more engaged, weeks with relatively more member engagement, compared with other weeks, were associated with improvement in OQ-45 scores. However, when clients generally saw the group as less engaged, weeks with relatively more group member engagement, compared with other weeks, were associated with greater deterioration in OQ scores. We recommend tracking week-to-week changes in member and other member engagement to identify group members who are not getting optimal program benefits.

Keywords: group engagement, OQ-45.2, substance use disorder, actor partner interdependence model, variance decomposition

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Group climate is one of the most examined process variables in different types of group treatments including outpatient weekly therapy groups and residential group treatment settings (McClendon & Burlingame, 2010). In this research, we examine group climate in a residential group treatment setting utilizing a wilderness treatment component. The most widely used group climate measure, in these different settings, is the Group Climate Questionnaire (GCQ, MacKenzie, 1983). The GCQ describes a group's climate along dimensions labeled engaged (self-disclosure, cohesion, and work orientation), avoiding (relying on the leader or other group members to avoid responsibility for change), and conflict (interpersonal conflict and lack of trust) (McClendon & Burlingame, 2010). In this research, we focus specifically on the engaged dimension because it shows consistent positive relationships with group member outcome (Kivlighan, Li, & Gillis, 2015).

Theoretically, engagement is related to better outcome (MacKenzie, 1983); however, this simple theoretical statement does not capture the complexities of how climate is measured or operates in groups. Typically, researchers ask group members to indicate their perceptions of their group's engagement for a group session; however, this perception can only be understood in context. Two important contexts are: (a) the engagement perceptions of the other group members and (b) the member's general perception of en-

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gagement across all group sessions. Kivlighan and Kivlighan (2013) argued that the other member context is important in understanding a member's engagement rating. For example, a group member's high engagement rating could have different meanings if the other members also saw engagement as either high or low, depending on the group climate. Similarly, Hoffman and Stawski (2009, p. 97) say that "persons should be modeled as contexts." In other words, a member's high engagement rating in a group session could have a different meaning if she typically saw engagement as high across sessions when compared with perceptions of engagement that were low across sessions. Given the importance of both other member and person contexts, the purpose of this study is to examine how other member and person context moderate the relationship between group members' perceptions of engagement and their treatment outcome.

Most of the studies using the GCQ engagement scale have examined the relationship between the group member's own perception of the group's climate and the group member's outcome. For example, Bonsaksen, Borge, and Hoffart (2013) found that group members' perceptions of engagement were related to short- and long-term symptom reduction in both cognitive and interpersonal group therapy for social phobia. Like most group researchers, however, Bonsaksen et al. did not take into account either the other member or the person context when examining group member engagement ratings. Below, we describe how group researchers can model both the other member context using the actor partner interdependence model (APIM; Kenny, Mannetti, Pierro, Livi, & Kashy, 2002) and person context using variance partitioning (Curran & Bauer, 2011; Hoffman & Stawski, 2009) when examining group engagement.

The APIM and Variance Partitioning for Examining the Context of Engagement Ratings

The APIM is a conceptual and a statistical model that specifies that a group member's outcome is a function of her own perception of the group's engagement and the engagement perceptions of the other group members (excluding the focal member). The APIM has been used to study a number of group processes (for reviews see Ervin & Bonito, 2014; Kivlighan & Kivlighan, 2013). Kivlighan & Kivlighan (2013) estimated that, in small groups, other group member effects were five to six times stronger than group member effects. It is important to note, however, that most of these Group APIM studies have not examined other member effects as a context for understanding member effects. This is because these APIM studies have typically modeled other member effects as main effects; in order to examine contextual effects, the other member effects have to be examined as moderators of member effects. Only Lo Coco, Gullo, and Kivlighan (2012) examined the interaction between other member and member effects. They found that the interaction between a member's attachment to the group-as-a-whole and the other members' attachment to the group-as-a-whole did not predict patient improvement

The Lo Coco et al. (2012) study collected longitudinal assessments of both attachment to the group-as-a-whole and group member outcome; therefore, they attempted to examine the within-person interaction between member and other member effects of attachment to the group-as-a-whole and member outcome. Their findings are limited, however, because they were not able to examine how attachment in a session was related to member improvement at that session.

Hoffman and Stawski (2009) say that: "Within-person processes do not happen in a vacuum, and the additive and interactive influences of more stable individual differences contained in the longitudinal measures need to be modeled explicitly. Otherwise, associations that reflect solely longitudinal or within-person relationships cannot be distinguished from those that reflect cross-sectional or between-person relationships" (p. 98). Therefore, in order to examine accurately the interaction between member and other member effects for engagement in predicting member outcome, we have to first separate member and other member effects for engagement into within-member and between-member components.

One reason that Lo Coco et al. (2012) may not have found a significant interaction between their member and other member effects in predicting group member outcome is because they did not operationalize this separation. As described by Hoffman and Stawski (2009), the failure to separate within-person and between-person process can result in biased effects for the model. Therefore, in this study we separate within-member and between-member effects and then examine how the group and person context of engagement are related to group member treatment outcome (symptom reduction).

We are aware of only three group treatment studies that separated the within-member and between-member effects for engagement (Kivlighan, Li, et al., 2015; Kivlighan & Paquin, 2014; Kivlighan, Paquin, & Hsu, 2014). Kivlighan and Paquin (2014) examined member and other member effects for engagement and separated them into within-member, between-member, within-other member, and between-other member components. They found significant within-member effects for both member and other member engagement. Specifically, there was a positive relationship between member and other member engagement ratings in a session and the actor's intimate behaviors in that session. Kivlighan and Paquin (2014) did not examine either the other member or person context for these member and other group member effects. Kivlighan et al. (2014) examined only member engagement and found that neither within-member nor between-member engagement was associated with member absence in the next session. However, there was a significant person-context interaction effect. The likelihood of a member attending the next session increased when members who generally rated sessions as low in engagement rated a previous session as high in engagement. Conversely, the likelihood of a member attending the next session increased when members who generally rated sessions as high in engagement rated the previous session as low in engagement. Finally, Kivlighan, Gelso, et al. (2015) also examined member engagement by exploring the interaction between between-groups engagement and within-member engagement. Similar to the Lo Coco et al., (2012) results, the interaction for between-groups engagement and within-member engagement was not significant. As described below however, none of the studies provide a complete examination of group and person contexts because the complete complement of within-member and between-member interactions have not been examined. Before describing the hypotheses tested in this study, it is important to

provide information about the treatment context being examined.

Context of the Study

This study examined treatment participant's longitudinal perceptions of engagement in the weekly group process meetings and biweekly measures of therapeutic outcome for young adults at Shunda Creek (see below for a complete description of this treatment program). The Shunda Creek residential program involves the use of: (a) individual counseling sessions with a masters level mental health professional, (b) weekly group process meetings, (c) nonpunitive behavioral contracting, and (d) short (1–5 day) adventure experiences emanating from the basecamp where the clients live.

The director of the Shunda Creek residential program describes the weekly group process meetings as follows:

> The group process meeting is one guaranteed group each week that allows all clients and staff to clear any stories they are developing (judgments) about someone else, enter into conversations to clarify how they are feeling/thinking, influence programming, and give and receive positive feedback around recovery and treatment goals. It is about taking personal responsibility for the Shunda culture and group process.
>
> It could be argued that the act of stepping out and saying what they perceive and what they need (to clients and staff) as well as hearing and owning hard feedback from others is integral to recovery. That is what we call being engaged with their recovery program. (Jeff Wilson, 2016, personal communication)

Program participants complete the engaged items at the conclusion of each of these group process meetings.

In most group therapy studies, group members are in a closed group with the same members in each group session. However, the young adults in this research were involved in an open enrollment program with revolving membership. In this research, our assessment of engagement is perceptions of engagement in the weekly group process meetings, which may have different members over time. This is similar to Tasca and Lampard's (2012) assessment of alliance for patients in an eating disorder treatment program at the same time.

As described by Tasca et al. (2010, p. 151): "Many community- and hospital-based group treatment programs have an open enrolment, that is, a rolling admissions structure, in which a group member who drops out or successfully completes therapy is replaced by another individual." We used the analytic strategy described by Tasca et al. (2010) to address the nonindependence in the data from the treatment program. Specifically, we used the aggregated other group members' OQ-45 score (partner OQ-45) as a time varying covariate in multilevel models examining the relationships between group member and other group member engagement and member treatment outcome. Therefore, the relationships between the group member and other group member engagement variables and member outcome represent the associations after controlling for the effect of the associated weekly partner outcome. Using this methodology, Tasca et al. (2010) found that a group member's alliance to the group-as-a-whole for any given week was positively associated the other group members' aggregated alliance (partner alliance) to the group-as-a-whole during that week. As described above, we build on the Tasca et al. (2010) study by partitioning our time-varying engagement ratings into within-member and between-member components.

Member, Other Member, and Interaction Hypotheses

Following Wang and Maxwell's (2015) recommendations, within-member engagement was defined as deviations in a group member's engagement rating for a specific week in treatment from that group member's average engagement ratings across all weeks in treatment. Between-member engagement was defined as a group member's averaged engagement ratings across all weeks in treatment. Therefore, for a young adult in treatment, some weekly group process meetings are seen as more engaged than other weekly group process meetings (within-member engagement) and some young adults generally see the group process meetings as more engaged than other young adults (between-member engagement).

We expanded on Wang and Maxwell's (2015) model by also examining within-other member and between-other member engagement. Within other member engagement was defined as deviations in the other group member's engagement ratings for a week in treatment from those other group members' average engagement ratings across all weeks in treatment. Between-other member engagement was defined as the other group members' averaged engagement ratings across all weeks in treatment. Therefore, for a young adult in treatment, the other group members see some weekly group process meeting as more engaged than other weekly group process meetings (within-other member engagement) and for some young adults the other group members generally see the weekly group process meetings as more engaged than other members for different young adults (between-other member engagement).

To summarize we have two member engagement variables (within-member engagement and between-member engagement) and two other member engagement variables (within-other member engagement and between-other member engagement). The hypotheses developed below relate to these four engagement variables.

As pointed out by Kivlighan and Paquin (2014) group theories have not distinguished a group member's general perceptions of the group's engagement (between-member engagement) from that group member's session-to-session engagement perceptions (within-member engagement). Therefore, between-member and within-member hypotheses concerning engagement have to be extrapolated from group theory and from the few empirical studies that have used variance partitioning in groups. Likewise, group theories have not distinguished between-member's perceptions of engagement and other-members' perceptions' of engagement.

Because the vast majority of the empirical literature is cross sectional and from the individual group member's perspective, the results of the engagement studies reviewed by Yalom and Leszcz (2005) suggest that between-member differences in engagement are related to outcome. As described above, however, an engaged group climate cannot only be assessed from the perspective of the group member but also from the perspectives of the other group members. Extrapolating from the cross sectional studies, we believe that differences between the other group members' percep-

tions of engagement will also be related to group member outcome.

Recent research by Kivlighan and Paquin (2014) shows that group members enact more intimate behaviors in sessions that they perceive as more engaged compared with sessions they perceive as less engaged. In addition, group members enact more intimate behaviors in sessions that the other members perceive as more engaged compared with sessions the other members perceive as less engaged. Also, group members feel more involved in group sessions that they perceive as more engaged compared with sessions that they perceive as less engaged (Kivlighan, Gelso, et al., 2015). Based on these findings we hypothesized:

Hypothesis 1(a): Group members will have greater benefit (e.g., symptom reduction) in weeks that they see as more engaged compared with weeks that they see as less engaged.

Hypothesis 1(b): Group members will have greater benefit (e.g., symptom reduction) in weeks seen as more engaged by the other group members compared with weeks seen as less engaged by the other group members.

As noted above, most of the studies examining engagement and treatment outcome are between-member studies because engagement is only measured at one point in time. These studies consistently show a positive relationship between engagement and member treatment outcome (see McClendon & Burlingame, 2010). In the studies that examined both session-to-session changes in engagement and differences between members in average engagement, only session-to-session changes in engagement, and not differences in the average level of engagement, were related to either member intimacy in sessions (Kivlighan & Paquin, 2014) or to members feeling more involved and valued in group sessions (Kivlighan, Gelso, et al., 2015). On the other hand, average differences in engagement were related to the probability of members attending the next group session or to members being more likely to attend the next group session. Given these mixed findings, we examined the following research question.

Research question 1(a): Is treatment benefit (e.g., symptom reduction) related to the average, across time, level of engagement perceived by the group member?

Research question 1(b): Is treatment benefit (e.g., symptom reduction) related to the average, across time, level of engagement perceived by the other group members?

Group theories have not addressed other member and person contextual effects. However, Kivlighan and Kivlighan (2013) suggested that other members' ratings of engagement would have a synergistic effect on actor ratings of engagement. Therefore, we hypothesized:

Hypothesis 2: Week-to-week group member engagement will interact with week-to-week other member engagement such that in weeks with greater other group member engagement, as group member engagement increases treatment benefit also increases. Conversely, in weeks with lesser other group member engagement, there is no association between group member engagement and treatment benefit.

Given the contradictory findings for differences between group members in their average level of engagement described above, we examined the following research question:

Research question 2: Does average level of group member engagement interact with the average level of other group member engagement to predict group member benefit?

Only Kivlighan et al. (2014) have examined member (person) context for group member engagement. They found that the average level of group member engagement across sessions interacted with the group member's level of engagement in a session to predict the probability of the member attending the next session. We are not aware of any research that has examined member context for partner engagement. Given the lack of theory and research addressing member context, we examined the following research questions:

Research question 3: Does average member engagement, across weeks in treatment, interact with member engagement in a particular week of treatment to predict member benefit?

Research question 4: Does average other member engagement, across weeks in treatment, interact with other member engagement in a particular week of treatment to predict member benefit?

Method

Treatment Program

As noted above, Shunda Creek is a 10-bed, open enrollment 90-day residential, substance use disorder (SUD) treatment program for 18–24-year-old males located outside of Rocky Mountain House in Alberta, Canada, operated by ENVIROS (enviros.org). Shunda Creek's program addresses SUD issues that require residential treatment and support, as determined by Alberta Health Services—Addiction and Mental Health, its primary funder. Shunda Creek began operation in 2009, and employs a program director, clinical director, an alumni coordinator, and therapeutic staff who work directly with the clients on a day-to-day basis. Shunda Creek focuses on treating co-occurring SUD and mental health issues. Shunda Creek emphasizes relationship building between the client and therapeutic staff through the use of: (a) natural consequences, (b) weekly group process meetings, (c) nonpunitive behavioral contracting, and (d) short (1–5 day) adventure experiences.

Shunda Creek integrates weekly group process meetings along with short (0.5–4 day) adventure experiences throughout treatment to help clients be present, open, and aware of their SUD treatment process. These experiences, termed "short sharps," typically consist of 1- to 5-day trips. The experiences are client-initiated with planned goals, themes, and foci, and may involve a water-based canoe trip, or a climbing or backpacking trip in the nearby Northern Rockies. Clients relate the therapeutic intentions of their adventure experience to their treatment process and goals through discussion with clinical and field staff as well as their peers. For example, a white water canoe trip experience may involve a client directly confronting his physical abilities and fear of being dependent on and sharing "power" with a peer in the canoe while

paddling in whitewater. This fear may be related to fears he might have confronting stressors and depending on his peers in posttreatment social situations that may lead to relapse and misuse or to making positive decisions not to use. These discussions are done "in the moment" to help make the experience concrete and relevant for the client as they progress through their treatment. On average, a client may participate on one trip per week throughout their stay in the program.

Participants

The current study involved 68 young adult men who entered treatment, agreed to participate in the evaluation, and were included in the data collection that took place between March, 2012 and June 2014. The clients average age was 21.36 years (SD = 2.07); six (9%) of the clients were identified as First Nations; the remainder were White. Clients completed an average of 77.16 days in treatment (SD = 27.18). The Personal Involvement with Chemicals Scale (Winters, Stinchfield, Henly, & Schwartz, 1990–1991) was used at intake to assess primary drug use among the clients. Clients self-reported cigarettes, alcohol, marijuana, and cocaine as their top drugs of choice. They scored an average of 94.35 (SD = 12.26) on the Personal Involvement with Chemicals Scale indicating frequent inappropriate use of these substances.

Measures

Treatment outcome. Outcome Questionnaire OQ-45.2 (Lambert, 2004), a well-respected self-report instrument measuring treatment progress, was used at intake, every two weeks following, and at discharge to monitor treatment outcome. The OQ-45.2 assesses three domains of psychosocial functioning: (a) Subjective Discomfort (e.g., *I feel hopeless about the future*), (b) Interpersonal Relations (e.g., *I am satisfied with my relationships with others*), and (c) Social Role Performance (e.g., *I have too many disagreements at work/school*). The OQ-45.2 is a Likert-scale instrument that contains 45 items that computes a total score, which can range from 0 to180, with lower scores indicating high levels of psycho-social functioning and higher scores indicating lower levels. Lambert et al. (1996) found the OQ-45.2 to have test–retest reliability estimated at r = .84, strong overall internal consistency (α = .93), and concurrent validity estimates ranging from r = .60 to r = .88 across several measures of psychosocial functioning. Vermeersch, Lambert, and Burlingame (2000) also demonstrated the instrument's ability to assess sensitive psychosocial change.

Group Climate Questionnaire-Short Form. The Group Climate Questionnaire-Short Form (GCQ-S; MacKenzie, 1983) was used to measure group members' weekly perceptions of the group climate. The GCQ-S comprises 12 items on a 7-point Likert scale, ranging from 1 (*not at all*) to 7 (*extremely*). While the GCQ-S is composed of three scales—engaged, avoidance, and conflict. To evaluate group climate at Shunda Creek, we assessed only the engaged scale. All items on the engaged scale are worded so that the group is the object of the rating (e.g., "The members liked and cared about each other"; "The members tried to understand why they do the things they do, tried to reason it out"). An engaged score is calculated by averaging across the engaged items, therefore engaged scores theoretically range from 1 to 7. The construct validity of GCQ-S has been tested extensively and research has demonstrated links between the GCQ-S scales and both group processes and group member outcomes (McClendon & Burlingame, 2010). The factor structure of the GCQ-S was confirmed using confirmatory factors analysis (CFA) in a recent study (Wang, Chen, Wang, & Lin, 2012). The internal consistency alphas for the engaged scale across all members and sessions was .83. The GCQ-S engaged scale is administered each week following the group process meeting.

Procedure

Each Wednesday evening a group process meeting is held at Shunda Creek and all clients in camp are invited to attend the meeting; while attendance is always a choice, the program director notes that most clients attend every meeting every week. The meetings are most always facilitated by the program director, who is not a therapist, but has more than 25 years of experience facilitating treatment groups with youth. The meetings have four components. Low level "sufferings" of clients and any resentments felt toward the group are the main focus and are dealt with first. As described by the program director, this is a time for interpersonal "stories"—client to client, client to staff, staff to client, or staff to staff (if the issue occurred in a group setting). The second component involves logistics—consistencies and group structure that are being opened to change. Clients have a clipboard located in a common area where they write agenda items for the meetings and these are generally logistical in nature. Third is sharing positive observations clients have seen in others recovery journey. The fourth component is taking the five items of the GCQ-S Engaged Scale. While the program director looks for opportunities to invite clients to run the group meetings whenever possible, the director notes he is likely to supplement freely to keep the integrity of the meetings intact.

At intake and every two weeks while at Shunda Creek, clients are administered the OQ 45.2 to routinely monitor client progress (Lambert et al., 2003). The therapist begins to review the results of the OQ 45.2 with clients in individual sessions at about the fourth week as trends in the data begin to emerge. As noted above, the Engaged scale is administered weekly. Each group member has a 2-week group member engagement score, which is the average of the two engagement ratings that fall between two consecutive OQ administrations. Each group member also has a 2-week other group member engagement score, which is the aggregated 2-week engagement scores of all of the other residents (excluding the 2-week engagement score of the focal member).

We decomposed these 2-week group member and other group member engagement scores into within-member engagement (differences between 2-week periods in group member engagement), between-member group engagement (differences between group members in their average engagement for all weeks in treatment), within-other group member engagement (differences between 2-week periods in other group member engagement), and between-other group member engagement (differences between other group members in their average engagement for all weeks in treatment) using the person-centering decomposition procedure described by Wang and Maxwell (2015). Specifically, we created within-member engagement by subtracting each member's 2-week group member engagement score from his mean group member engage-

ment score for all of the weeks he was in treatment. This mean group member engagement score is the score for between-member actor engagement. A similar procedure was followed in making within-member and between-member other group engagement scores.

Two interaction terms were created to examine group process. The first, by multiplying within-member engagement by within-other group member engagement and the second, by multiplying between-member engagement by between-other group member engagement. The first of these interaction terms assesses how the amount of engagement that the other group members experienced in a 2-week period affected the relationship between the amount of engagement that the group member experienced in a 2-week period and the amount of benefit the group member experienced during that 2-week period. As a specific example, this interaction term tested our synergy hypothesis that when other group members experienced more engagement in a 2-week period there would be a positive and significant relationship between group member engagement in that two weeks and group member benefit during that two weeks. The second of these interaction terms assesses how the average amount of engagement that the other group members experienced across all weeks that the group member was in treatment affected the relationship between the average amount of engagement that the group members experienced across all weeks in treatment and the amount of benefit the group member experienced. To examine person context effects, we specified two cross-level interactions: (a) between-member engagement by within-member engagement and (b) between-other group member engagement by within-other group member engagement. The first of these interaction terms assesses how the average amount of engagement that the group members experienced across treatment affected the relationship between the amount of engagement that the group member experienced in a 2-week period and the amount of benefit the group member experienced during that 2-week period. The second of these interaction terms assesses how the average amount of engagement that the other group members experienced across all weeks that the group member was in treatment affected the relationship between the other group member engagement in a 2-week period and the amount of benefit the group member during that 2-week period. All variables were centered before making the interaction terms to reduce multicollinearity.

We computed another group member OQ-45 score for each week by aggregating the OQ-45 scores of the other group members in treatment that week (excluding the focal members OQ-45 score). We use this other group member OQ-45 score to control for data nesting as described by Tasca et al. (2010).

Data Analysis

We used a model building approach to determine if other member and member context contributed additional explanatory power after accounting for the actor and partner main effects. In the first level (treatment week) of the first HLM model, we entered within-member engagement and within-other member engagement as predictors of OQ scores. In addition, we controlled for the member's week in treatment because the members varied in the length of time they remained in treatment and because the rolling admissions made the week in treatment different for each member. As described above, we also controlled for other member OQ-45. In the second level (member level) of the HLM model, we entered between-member engagement and between-other member engagement. The specific two-level model examined is displayed in the Appendix of the online supplemental materials. In the second model the within-other member by within-member engagement interaction term was added at level 1 and the between-other member by between-member engagement interaction term were added as a predictor at level 2. In addition, between-member engagement was specified as a level 2 predictor of the within-member engagement-OQ slope at level 1 and between-other member engagement was specified as a level 2 predictor of the within-other member engagement-OQ slope at level 1. The χ^2 difference test was used to determine if the addition of other member and individual context was justified. The specific two-level model examined is displayed in the Appendix of the online supplemental materials.

Results

Across all participants and time periods the average engaged rating was 4.02 ($SD = 1.01$) and the average OQ score was 63.50 ($SD = 26.61$). As seen in Table 1, week in treatment was significantly and negatively related to OQ scores. Because lower OQ scores are indicative of high levels of psycho-social functioning,

Table 1
Outcome Questionnaire-45 Scores as a Function of Within-Member and Within-Other Member Engagement and Between-Member and Between-Other Member Engagement, Controlling for Week in Treatment

Fixed effect	Coefficient (standardized)	*SE*	*t*-ratio	*p*-value
Outcome Questionnaire-45, γ_{00}	60.94 (−.10)	2.12	28.72	<.001
Between-member engagement, γ_{01}	−4.64 (−.16)	1.90	−2.45	.017
Between-other member engagement, γ_{02}	−4.34 (−.08)	5.09	−.85	.397
Other member Outcome Questionnaire-45, γ_{03}	5.76 (.19)	2.15	2.68	.009
Week in treatment, γ_{10}	−9.80 (−.37)	1.30	−7.05	<.001
Within-member engagement, γ_{20}	−2.71 (−.06)	1.63	−1.66	.100
Within-other member engagement, γ_{30}	1.07 (.02)	2.08	.52	.607

Note. $N = 68$.

the results show that the members, on average, improved in their psycho-social functioning during their time in the treatment program.

Results of the HLM analysis for Model 1 are presented in Table 1. Contrary to our first hypothesis neither within-member engagement or within-other member engagement was related to member treatment outcome. Therefore, biweekly variations in member and other member engagement were not related to biweekly variations in OQ scores. In addition, between-other member engagement was not related to member treatment outcome. Therefore, the other members' general sense of engagement (across weeks in treatment) was not related to OQ scores. As hypothesized, however, between-member engagement was significantly and negatively related to OQ scores ($\gamma_{01} = -4.64$, $p = .017$). When the member generally (across all weeks in treatment) saw the climate as engaged he had lower OQ scores. The standardized gamma of .16, indicates that this between-member effect is small.

Results of the HLM analysis for Model 2 are presented in Table 2. The χ^2 difference test revealed that Model 2 was a significantly better fit to the data than Model 1 (χ^2 statistic = 19.02649, df = 5, $p = .002$). In terms of the other group member context, contrary to our hypothesis, within-member engagement did not interact with within-other member engagement to predict OQ-45 scores. However, between-other member engagement did interact with between-member engagement to predict OQ-45 scores. The gamma based on the standardized variables indicates that this interaction is a large effect (−0.69). The form of this interaction is depicted in Figure 1. As seen in the figure, when between-other member engagement was high (one standard deviation above the mean) there was a significant negative relationship (simple slope = −.45, $p < .05$), with increasing between-member engagement being associated with decreasing OQ-45 scores. Therefore, when the other group members generally see the climate as engaged, higher general perceptions of engagement for the member are related to fewer problems. However, when between-other member engagement was low (one standard deviation below the mean), there was a significant positive relationship (simple slope = .58, $p < .05$), with increasing between-member actor engagement being associated with increasing OQ-45 scores. Therefore, when the other group members generally see the climate as not engaged, higher general perceptions of engagement for the member are related to more problems.

In terms of person context, between-member engagement interacted with within-member engagement to predict OQ-45 scores. The gamma based on the standardized variables indicates that this interaction is a small effect (−0.13). The form of this interaction is depicted in Figure 2. As seen in the figure, when between-member engagement was high (one standard deviation above the mean) there was a significant negative relationship (simple slope = −.23, $p < .05$), with increasing within-member engagement being associated with decreasing OQ-45 scores. Therefore, when the group member generally sees the climate as engaged, higher member biweekly perceptions of engagement related to fewer problems during that 2-week period. However, when between-member engagement was low (one standard deviation below the mean) there was a no significant relationship (simple slope = .18, $p > .05$) between within-member engagement and OQ-45 scores. Therefore, when the member generally sees the climate as not engaged, higher biweekly perceptions of engagement for the member are unrelated to changes in problems.

Because we center the session-level actor and partner engagement, the within-session coefficients examine whether positive deviations in actor or partner engagement perceptions predict positive or negative deviations in client OQ-45 ratings. We reran our models including the prior 2-weeks OQ as a level-1 covariate to see if controlling for prior OQ affects the results. The significant results did not change when this previous 2-week OQ score was added as a covariate.

Discussion

This research took place in a residential treatment program for young adult substance abusers. We found that specific patterns of member and other member engagement ratings, described below, in the weekly group process meetings were related to better treatment outcome. As described by the program director these weekly group process meetings provide the young adults the opportunity to say how they perceive and what they need from other clients and staff. The group process meetings also involve hearing and owning hard feedback from others. Giving, receiving feedback, articulat-

Table 2
Outcome Questionnaire-45 Scores as a Function of Within-Member and Within-Other Member Engagement, Between-Member and Between-Other Member Engagement, and Other Member and Person Contexts, Controlling for Week in Treatment

Fixed effect	Coefficient (standardized)	*SE*	*t*-ratio	*p*-value
Outcome Questionnaire-45, γ_{00}	61.14 (−.09)	2.02	30.25	<.001
Between-member engagement, γ_{01}	18.98 (.66)	10.64	1.78	.078
Between-other member engagement, γ_{02}	39.34 (.72)	19.84	1.98	.051
Between-member by between-other member engagement, γ_{03}	−11.00 (−.69)	4.78	−2.30	.024
Other group member Outcome Questionnaire-45, γ_{03}	5.27 (.19)	2.36	2.23	.017
Week in treatment, γ_{10}	−9.25 (−.35)	1.26	−7.37	<.001
Within-member engagement, γ_{20}	−1.91 (−.04)	1.58	−1.21	.229
Between-member engagement, γ_{21}	−6.94 (−.13)	2.81	−2.47	.016
Within-other member engagement, γ_{30}	.61 (.01)	1.92	0.32	.750
Between-other member engagement, γ_{31}	3.08 (.03)	3.82	0.81	.422
Within-member engagement by within-other member engagement, γ_{40}	5.03 (.06)	3.07	1.64	.106

Note. $N = 68$.

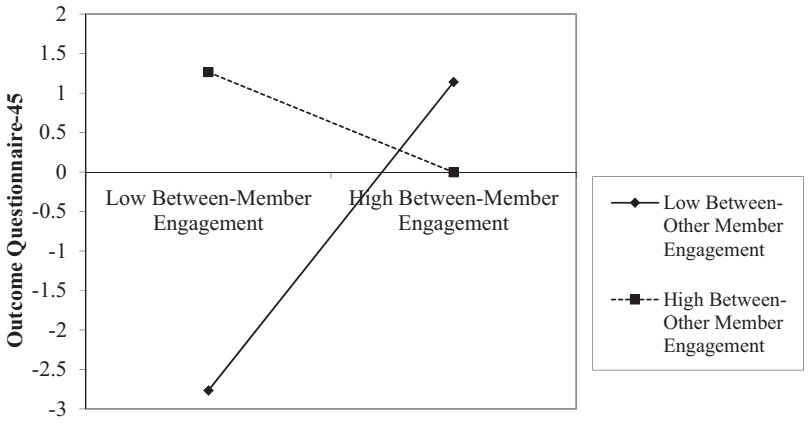

Figure 1. The interaction of between-other member engagement (moderator variable) and between-member engagement (predictor variable) in predicting OQ-45 scores. *Note.* $N = 68$. Between-member engagement is the group member's average perception of community meeting engagement aggregated across all of his weeks in treatment. Between-other member engagement is the average perception of community meeting engagement by the other group members aggregated across all of the weeks in treatment.

ing, and responding to other members' needs and wants are processes that are integral to many forms of group psychotherapy. Whereas our results are specific to engagement ratings of group process meetings in residential treatments, we believe that the findings can also be cautiously generalized to engagement perceptions in other types of group treatments.

The purpose of this study was to examine how the other members' context of engagement, the engagement ratings made by the other group members (Kivlighan & Kivlighan, 2013) and the person context of engagement, the group member's or other group members' general engagement aggregated across all group process meetings, moderated engagement perceptions for specific group process meetings to predict outcome. There was a significant other member context effect with other member's general perceptions of engagement, across all group process meetings attended, moderating the member's general perceptions of engagement, across all group process meetings attended, to predict member improvement. There was also a significant person context effect with a member's general perceptions of engagement, across all group process meetings attended, moderating how biweekly perceptions of engagement are related to member improvement.

The vast majority of group treatment studies, whether of traditional outpatient therapy group or of residential treatment programs, examining the engagement–outcome relationship have examined how between-person differences in perceptions of engagement are related to between-person differences in outcome. This focus on between-person differences is a consequence of researchers' overreliance on cross-sectional designs with only a single time of measurement. These cross-sectional studies show a consistent positive relationship between group

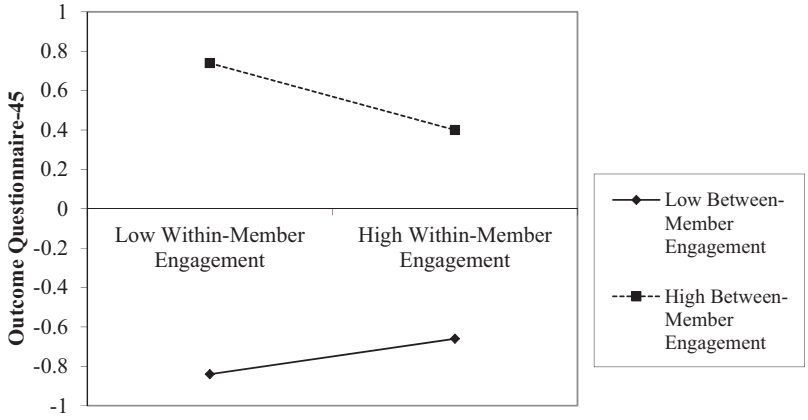

Figure 2. The interaction of between-member engagement (moderator variable) and within-member engagement (predictor variable) in predicting OQ-45 scores. *Note.* $N = 68$. Between-member engagement is the group member's average perception of community meeting engagement aggregated across all of his weeks in treatment. Within-member engagement is the group member's perception of community meeting engagement in specific weekly community meetings.

members' perceptions of engagement and their outcome. In our initial model, we also found a relationship between between-member engagement and outcome. However, our between-member engagement was an average engagement rating across all of the group process meetings attended during the participant's treatment. We believe that combining engagement ratings across multiple group sessions provides a more stable and reliable measure of differences between individuals in how they perceive the group's engagement. Both the cross-sectional operationalization of between member engagement and the longitudinal operationalization of between member engagement shows that when a member sees a group as more engaged that member will have a better outcome. This relationship between between-member engagement and outcome appears to generalize across different types of group experiences.

However, the effect of a member's general perception of engagement was much smaller than the effect of a member's general perception of engagement as moderated by the general perceptions of engagement of the other group members. As suggested by Kivlighan and Kivlighan (2013), the other group members' perceptions of engagement had a synergistic effect on the member's own perception of engagement. When the other group members saw the climate of the group process as generally high in engagement the member's own general perceptions of engagement in the group process meetings were positively related to treatment outcome. By contrast, it seems particularly countertherapeutic if the member generally perceives the climate of the group process meetings as engaged but the other group members perceive the climate of the group process meetings as unengaged. There are now several studies that show the importance of the member to "being on the same page as the other group members" in how the group is perceived (e.g., Lo Coco, Gullo, & Kivlighan, 2012). Our results extend this "being on the same page" phenomenon beyond traditional groups to group process meetings in residential settings. Not being on the same page with the other group members is evidence that the member is an outlier. Both group theorists' (Yalom & Leszcz, 2005) and social psychologists' (Marques, Yzerbyt, & Leyens, 1988) have described the problems that group deviants or group outliers experience. The "black sheep effect" (Marques et al., 1988) describes how a member who perceives the group differently than the other members can be treated harshly and be rejected by the other group member. It is possible that a member who perceives the group process meetings differently from the other members is being treated like a "black sheep" in the therapeutic group process.

Because one purpose of the group process meetings is to get everyone on the same page and iron out differences in the group process, it is probably not surprising that a young adult who generally sees the engagement as different from the other members' general perceptions of engagement will not derive much benefit from the residential experience. It is interesting that there was no other member context effect at the within-member level. This suggest that it is the accumulated experience of consistently being an outlier and not the experience of being an outlier in a particular week that is problematic. Our findings diverge from those of Lo Coco et al. (2012), who did not find an a contextual effect for the other members in a more traditional group therapy setting. This divergence may highlight a difference between traditional group treatments and group-based residential treatments. Given the extent and intensity of interactions between members in residential treatments, how the other members view the group's engagement may take on heightened importance.

Given the lack of improvement experienced by members who generally perceived the group process meetings as more engaged when the other members perceived the group process as less engaged, it is important to have an early identification system for these participants whose overly positive perceptions of the group process meeting put them are at risk of treatment failure. As suggested by Strauss, Burlingame, and Bormann (2008) treatment staff can use the weekly engagement ratings to monitor members' perceptions of the group process meetings and identify those members whose perceptions are discrepant from the other group members. It is important to note in regard to using weekly ratings to identify outliers, that there was no other group member context effect for member's week-to-week ratings of engagement. The lack of within-member findings for group context suggests that being an outlier in a week is not as detrimental as the accumulated effect of have outlying perceptions. If treatment teams can use week to week engagement ratings as progress monitoring to identify members who are at risk of becoming outliers, they can intervene to help deviant perceptions from accumulating.

This was only the second study to examine the person context of engagement. Kivlighan et al. (2014) found that within person discrepancy in engagement perceptions was related to the probability the group member would attend the next session. For example, group members who typically saw the group as engaged were more likely to attend the next session when they perceived the current session was seen as less engaged than usual. In this study, however, consistency in engagement perceptions was related to greater week to week improvement. When group members who typically saw the group as engaged had treatment weeks that were more engaged than usual, they also had lower biweekly OQ scores. The discrepancy between the findings of this study and Kivlighan et al. (2014) highlight the complexities of group treatment. For some outcomes (attendance) having engagement perceptions that diverge from one's typical perceptions is beneficial whereas for other outcomes (symptom change) having engagement perceptions that converge with one's typical perceptions is beneficial. On the other hand, the differences in treatment contexts may account for the discrepant findings between this study and Kivlighan et al. (2014). Consistency in perceiving group process meetings as more engaged might be particularly important in a setting where you are continually interacting with other participants. It is important for future research to continue to identify those situations or variables where self-divergence is beneficial and those situations where self-convergence is beneficial.

The data for this study come from one substance use disorder treatment program for young adult males; therefore, it will be important to replicate this research in other types of treatment settings. Both our study and the Tasca et al. (2010) study were conducted in residential settings with rolling admissions. Perhaps the intensive nature of these settings may highlight the importance of the other member context effect because the other group members are always together. It will be important to see if other

member context effects are seen in other type of groups (e.g., outpatient therapy groups, personal growth groups). While the group sessions were not conducted by a mental health practitioner, the format of the group process meetings would fit with how many group sessions are conducted in residential treatment and perhaps provide a ritualistic format that would impact the group level outcomes that are being assessed by the collective OQ 45.2 scores for each 2-week period.

Treatment participants completed both the outcome and engagement assessments; therefore, single-rater bias may have influenced the relationships obtained. Future research could benefit from having an outside assessment of engagement and outcome. Engagement ratings were made in reference to the weekly group process meetings whereas OQ-45 ratings were made by weekly. Therefore, all of findings concerning engagement come from averaging two weeks of engagement ratings in order to match the frequency of the OQ-45 assessments. Whereas the two engagement ratings were consistent ($\alpha = .77$) it would be informative in future research to have the frequency of assessment and outcome ratings matched. Finally, engagement ratings were specifically made in relation to the group process meetings, which were only one aspect of a comprehensive residential treatment program. These other aspects of the treatment program also affected the benefit that the young adults received from the program. As argued above, however, the group process meetings do serve as weekly capstone experiences where different aspects of the program can be integrated. Never the less, it would be interesting for future research to examine engagement ratings specific to other aspects of the program.

Conclusion

This study showed that other members' and member's general perceptions of group process meeting engagement interacted to predict treatment benefit. This suggests that, at least in residential treatment settings, it is important to see the member's general sense of group process meeting engagement in relation to the other members' general sense group process meeting engagement. Both practitioners and researchers need to move beyond an exclusive focus on the members own engagement to a focus on how the member's engagement relates to the other members' engagement.

This study also showed that a member's general perceptions of group process meeting engagement interacted with a member's bi weekly perception of group process meeting engagement to predict treatment benefit. This suggests that, at least in residential treatment settings, it is important for researchers and practitioners to have both a long-term and a short-term sense of the member's perceptions of engagement in group process meetings. Most importantly, we think that it important to continue to examine other member and person contexts in other types of group treatments. It will be important to see if the context effects seen in this study are specific to residential treatment settings or are generalizable to other types of groups.

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