Predictors of the therapeutic alliance in group therapy for individuals with treatment-resistant auditory hallucinations

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Objectives. This study hypothesized that several baseline client characteristics (i.e. age, symptoms, insight, social functioning) would significantly predict client-rated group alliance in out-patients with schizophrenia spectrum disorders.

Design. Hierarchical linear modeling (HLM) was used to evaluate the contributions of selected baseline individual client characteristics and group level characteristics to client-rated group alliance at the sixth session of group therapy. The effect of treatment type (CBT vs. ST) on group alliance and interaction with predictor variables were also analysed. Finally, correlations were computed to explore the relationship between group alliance, attendance, and treatment engagement.

Methods. Sixty-three out-patients who had treatment-resistant auditory hallucinations were randomly assigned to either group CBT, which targeted reduction of distress associated with hallucinations, or group ST, which focused on improving social integration.

Results. Results indicate that a stronger group alliance at the mid-point of treatment was associated with overall higher levels of group insight, and lower individual autistic preoccupation and social functioning at the baseline assessment. In addition, stronger group alliance was significantly correlated with higher attendance rates and therapists' ratings of treatment compliance.

Conclusions. These findings have implications for determining group composition and identifying clients low in therapeutic engagement. Suggestions for future research on group alliance are also discussed.

Background

Therapeutic alliance is conceptualized as the emotional and collaborative relationship between a client and therapist and is described as a 'non-specific' factor due to its application across treatments (Bordin, 1979). Meta-analyses and narrative reviews of

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individual therapy across diagnoses report a significant association between alliance and treatment outcome in 66–70% of studies (Luborsky & Auerbach, 1985; Orlinsky, Grawe, & Parks, 1994) with modest effect sizes (.22–.26; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000). There have been multiple important outcomes associated with stronger therapeutic alliance among clients with schizophrenia. These include lower client-perceived problems and symptom severity (Frank & Gunderson, 1990; Gehrs & Goering, 1994; Neale & Rosenheck, 1995), higher general and social functioning (Frank & Gunderson, 1990; Neale & Rosenheck, 1995; Svensson & Hansson, 1999), greater medication compliance and fewer required medications (Dolder, Lacro, Leckband, & Jeste, 2003; Frank & Gunderson, 1990), better attitudes towards treatment (Day *et al.*, 2005), and lower drop-out rates (Frank & Gunderson, 1990). These findings from individual therapy research underscore the importance of examining therapeutic alliance in group therapy, as this modality might be a particularly efficient way of delivering mental health services given the paucity of therapists trained in psychotherapy for psychosis (discussed in Barrowclough *et al.*, 2006; MacKenzie, 1994).

Therapeutic alliance can be divided into two dimensions when discussed in the context of group therapy (Gillaspy, Wright, Campbell, Stokes, & Adinoff, 2002). The first dimension is the specific client–therapist relationship for each group member, referred to as the 'individual alliance'. This dimension can be measured from the client's and/or therapist's perspective (e.g. the client in a treatment group rating his alliance with the therapist) and is the most frequently discussed dimension of the alliance in group settings. In fact, a recent review found that 9 out of 13 group therapy studies defined therapeutic alliance only in terms of individual alliance (Johnson, in press). And, consistent with the studies of individual therapy, Johnson reported that stronger individual alliance (in a group context) predicted improved outcomes such as reduced symptoms and lower drop-out rates in 11 out of 13 group therapy studies spanning various clinical populations and theoretical orientations.

The second dimension is 'group alliance', or the relationship of an individual with the entire group. Only one study has measured group alliance as a unique construct (Budman *et al.*, 1989). This dimension may be particularly important as clients in group therapy rate interpersonal factors, such as relationship–climate and other- versus self-focus, as more important to them than do clients in individual therapy (Holmes & Kivlighan, 2000). These factors are therefore likely to be more prominent in a group *vis-à-vis* individual therapy modality.

Given the association of therapeutic alliance with clinical outcomes, it is important to identify factors that predict a better alliance in group therapy. In non-psychotic samples, stronger group alliance has been predicted by higher client self-esteem and fewer overall symptoms at baseline (Budman *et al.*, 1989), while stronger group cohesion (a related construct) has also been predicted by fewer baseline symptoms (Gillaspy *et al.*, 2002). Unfortunately, no research has examined client characteristics associated with the therapeutic alliance in group therapy for clients with schizophrenia. Thus, research on predictors of the alliance in the context of individual therapy for psychotic disorders may provide relevant information with respect to critical variables in a group context.

A variety of clinical and demographic variables are associated with the formation of therapeutic alliance among clients with psychotic disorders. Specifically, higher client baseline social and occupational functioning predicts a stronger therapeutic alliance (Couture *et al.*, 2006; Frank & Gunderson, 1987). In addition, a stronger alliance is predicted by lower overall symptom levels (Frank & Gunderson, 1987), as well as lower

ratings on specific symptoms, such as hostility and disturbances of volition (Frank & Gunderson, 1987) and the autistic preoccupation and activation factors (Couture *et al.*, 2006) of the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987). Finally, higher insight ratings (Dunn, Morrison, & Bentall, 2006; Svensson & Hansson, 1999) and being older than 45 years of age predicted a stronger therapeutic alliance (Solomon, Draine, & Delaney, 1995). Taken together, these findings suggest that higher baseline social functioning, lower symptoms, greater insight, and older age predict the formation of stronger therapeutic alliance in individual therapy. However, the factors that predict therapeutic alliance in group therapy for clients with schizophrenia remain unknown.

The purpose of this study was to investigate the client characteristics that are predictive of group alliance among individuals with schizophrenia receiving either group cognitive–behavioural therapy (CBT) or supportive therapy (ST) (Penn, Meyer, Evans, Cai, & Burchinal, 2007). Based on previous research on predictors of the alliance in individual therapy, the following baseline client characteristics were hypothesized to predict stronger client-rated group alliance: older age, lower levels of 'autistic preoccupation' and 'activation' on the PANSS, greater insight, and higher social functioning. Given the non-specific nature of the therapeutic alliance and the pantheoretical nature of the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), which was modified for use in a group format, we did not expect that type of therapy would have a main effect on group alliance or interaction with specific predictors. Finally, given the relationship between therapeutic alliance and outcome, exploratory analyses were conducted to examine the relationship between group alliance, treatment engagement and therapy attendance. Details of the clinical outcomes of this study can be found in Penn *et al.* (2007), who found that while both group CBT and enhanced ST were associated with reduced symptoms, treatment effects on overall symptoms were only maintained by participants who received CBT.

Methods

Participants
The participants ($N = 63$) were part of a randomized clinical trial comparing group CBT with ST for individuals with schizophrenia who experienced treatment-resistant auditory hallucinations, as defined below ($N = 58$ were included in this report due to incomplete data or drop-out). The demographic characteristics of the participants are summarized in Table 1. Participants were recruited primarily from an out-patient clinic at the University of North Carolina-Chapel Hill, as well as from mental health centres in Wake and Durham Counties in North Carolina. To be eligible for the study, participants must have met the following criteria: (1) DSM-IV diagnosis of either schizophrenia or schizoaffective disorder [based on the Structured Clinical Interview for DSM-IV (SCID-P; First, Spitzer, Gibbon, & Williams, 1995)]; (2) 18–65 years old; (3) IQ > 70 [measured by the Wechsler Abbreviated Scales for Intelligence (WASI; Wechsler, 1999)]; (4) no current substance dependence; and (5) auditory hallucinations of at least moderate severity (i.e. a rating of at least a four on the PANSS hallucinations item, described below), despite two previous medication trials, one of which was a stable regiment of an atypical neuroleptic for at least eight consecutive weeks prior to randomization (Volavka *et al.*, 2002). Twenty-nine potential participants were not eligible for the research study after the telephone screening and thirty-eight individuals refused to participate after being referred for the study.

Table 1. Participant demographics (*N* = 63)

	N	*%*
Gender – Male	33	52
Ethnicity[a] – Caucasian	36	55
African-American/Black	28	43
Hispanic	5	7
Diagnosis – Schizophrenia	32	
Schizoaffective	31	
	M	*SD*
Age	42.1	12
Education	12.7	1.5
IQ score (WASI)	93.9	16.8
Age at first hospitalization	25.3	9.3
Total hospitalizations	7.6	5.9

[a] Six participants endorsed more than one ethnicity.

Measures

Positive and negative syndrome scale (PANSS)

The PANSS (Kay *et al.*, 1987) is a semi-structured interview with sound psychometric properties that is commonly used to assess the symptoms of schizophrenia. A research assistant, who had been trained to adequate reliability (ICC > .80 with a gold standard rater) and was blind to treatment condition, administered the PANSS. The five-factor solution of the PANSS was used in the present study: positive symptoms, negative symptoms, dysphoric mood, activation (indicating overactivation), and autistic preoccupation (White, Harvey, Opler, & Lindenmayer, 1997). The factors of particular interest in this study include activation, which can be described as a client's level of general agitation (comprising the following items: hostility, impulsivity, uncooperativeness, excitement) as well as autistic preoccupation, which is often associated with cognitive disorganization (comprising the following items: poor attention, preoccupation, difficulty in abstraction, stereotyped thinking, disturbed volition).

Beck cognitive insight scale (BCIS)

The BCIS (Beck, Baruch, Balter, Steer, & Warman, 2004) is a self-report scale that assesses cognitive insight in people with psychosis. Specifically, the BCIS assesses self-reflectiveness about unusual experiences, capacity to correct erroneous judgments, and certainty about mistaken judgments. The BCIS has been found to have adequate internal consistency and convergent validity, and factor analyses have identified two subscales, self-reflectiveness (nine items) and self-certainty (six items) (Beck *et al.*, 2004). In the current study, these subscales yielded Cronbach's alpha of .63 and .54, respectively. A composite Reflectiveness–Certainty Index (or R–C Index) score is computed with higher R–C Index scores indicating greater cognitive insight.

Social functioning scale (SFS)

The SFS (Birchwood, Smith, Cochrane, Wetton, & Copestake, 1990) is a commonly used self-report measure of social and occupational functioning for individuals with schizophrenia, which has excellent psychometric properties. For this study, the total

score on the SFS was used as an index of social functioning, which yielded a Cronbach's alpha of .65.

Group working alliance inventory-client rated (WAI-G)

The WAI-G was created by modifying the WAI (Horvath & Greenberg, 1989), such that the client rated the relationship with the group (e.g. 'I feel that the group appreciates me', 'I am confident in the group's ability to help me', 'the group does not understand what I am trying to accomplish in therapy') as opposed to the therapist only. There were no changes made to the WAI's 7-point Likert scale, anchors, number of items (36), or to the three subscales: the degree to which client and therapist/group become attached (i.e. '*bond*'), collaborate on specific therapeutic activities (i.e. '*tasks*'), and agree on the global objectives of therapy (i.e. '*goals*'). The clients completed the WAI-G at the mid-way point of treatment (i.e. at the sixth session) and placed their ratings in a sealed envelope, which were given to a research assistant. To reduce a social desirability bias, the client was informed that their responses would not be shared with the therapists, but would only be available to members of the research staff. Cronbach's alpha for the total score was .92 and the subscales all had reliability estimates greater than .74, indicating adequate reliability.

Psychosocial treatment compliance subscale (PTCS)

The PTCS (Tsang, Fung, & Corrigan, 2006) is a 17-item, therapist-rated Likert scale of compliance and treatment engagement with psychosocial interventions designed for people with psychotic disorders. It comprises two subscales, participation and attendance, which both have excellent reliability (for this study, Cronbach's $\alpha = .95$ and .76, respectively), and convergent validity with insight in the original Tsang *et al.* study.

Objective attendance data was also obtained in the current study by tabulating the number of sessions attended.

Procedure

Prior to beginning treatment, participants were assessed using the PANSS, BCIS, and SFS. The participants were then randomly assigned to receive either group CBT or ST for 12 one-hour weekly sessions. Each group was comprised of either one or two therapists and between four and seven clients. If a group had less than five members, only one therapist was assigned in order to maintain comparable client–therapist ratios across groups. Prior to the sixth session of group therapy, clients were administered the WAI-G. After the final session, therapists completed the PTCS.

Treatments

Group CBT is a manual-based and structured intervention that uses psychoeducation and CBT techniques to reduce the distress associated with auditory hallucinations (Wykes, Parr, & Landau, 1999). Self-monitoring of hallucinations allowed for the identification of any pattern that may be present and encouraged a functional analytic approach to clients' experiences. Individuals then began to utilize multiple coping strategies when they experienced auditory hallucinations and were asked to monitor the effectiveness of these coping strategies in reducing the amount of distress they experienced. Group-enhanced ST is a manual-based and non-directive intervention

focusing on emotional support and counselling of non-symptom related problems (Penn *et al.*, 2004). The primary goal of enhanced ST was to improve social integration into the community by providing a supportive environment for the client and helping her/him become more satisfied with their level of social functioning and integration. The group took a direct approach to solving problems often relying on advice from the therapists and other group members. This treatment was offered to control for the non-specific effects of group CBT.

The therapists included a clinical psychologist, a psychiatrist, and doctoral students in clinical psychology with the equivalent of at least a Masters degree in psychology. Therapists were randomly assigned to either group CBT or group ST and trained in the intervention via didactic presentations, directed readings, and role playing conducted in the three months prior to the first group session. These therapists were kept blind to the hypotheses of this study. A clinical psychologist reviewed the audiotaped group therapy sessions and conducted weekly supervision with therapists to maintain treatment fidelity. In addition, a *post hoc* check on treatment adherence was performed by having two raters code all 120 audiotaped group sessions. The two raters, who were blind to treatment type, correctly coded 92% of the group sessions as either CBT or ST (Note: if session #12, which was often devoted to wrapping up and an end-of-treatment celebration, was excluded from the analyses, then classification accuracy increased to 95%).

Planned data analyses

First, Pearson correlations were computed to examine the interrelationships among the predictor variables, and among the WAI-G total and subscales. Hierarchical linear modelling (HLM) was then used to evaluate the contributions of selected baseline client characteristics and group level characteristics to client-rated group alliance at the sixth session of group therapy. Next, the effect of treatment type (CBT vs. ST) on group alliance and interaction with predictor variables were analysed. Finally, correlations were computed to explore the relationship between group alliance, attendance, and treatment engagement.

Results

Descriptive statistics

Descriptive statistics for the baseline client characteristics, mid-treatment group alliance (and subscales), and post-treatment therapeutic engagement are summarized in Table 2. Because of a positively skewed distribution of the variable '# of group sessions missed', a natural log transformation was performed in order to better approximate a normal distribution. The distribution of the activation factor from the PANSS was also positively skewed due to a floor effect.

Correlational analyses

Table 3 summarizes the correlations among the predictor variables. None of the predictors were significantly associated with one another, indicating a relative independence among the predictor set.

Pearson correlations were computed among the WAI-G subscales and total score. All of these variables were highly correlated with one another (range: .77–.95), therefore only the WAI-G total score will be used in subsequent analyses.

Table 2. Descriptive statistics for predictor and outcome variables, and therapeutic alliance

	Mean	SD	Min	Max
Predictor variables (baseline)				
Activation factor (PANSS)[a]	4.87	1.66	4	13
Autistic preoccupation factor (PANSS)[a]	8.51	2.48	5	15
Insight (BIS)[a]	5.32	5.79	−10	21
Social functioning (SFS)[a]	121.97	22.59	70	160
Therapeutic alliance (6th session)				
Group alliance total (WAIC-G)[b]	193.32	26.58	122	246
Task scale (WAIC-G)[b]	66.13	9.49	43	84
Bond scale (WAIC-G)[b]	63.12	9.92	34	83
Goal scale (WAIC-G)[b]	64.08	9.03	45	84
Outcome variables (12th session)				
Participation (PTCS)[c]	47.00	9.16	23	60
Attendance (PTCS)[c]	20.04	4.03	7.8	25
# of sessions missed (log)[b]	1.14	0.72	0	2.48

[a]$N = 63$; [b]$N = 58$; [c]$N = 60$.

Table 3. Intercorrelations among predictor variables

	Activation factor	Autistic preoccupation factor	Insight	Social functioning
Age	−.11 ($p = .37$)	.03 ($p = .82$)	.03 ($p = .83$)	−.08 ($p = .51$)
Activation factor		.13 ($p = .33$)	−.02 ($p = .87$)	.12 ($p = .35$)
Autistic preoccupation factor			.16 ($p = .20$)	.11 ($p = .40$)
Insight				.11 ($p = .40$)

Hierarchical linear modelling

HLM was employed to account for non-independence due to the nested data structure of clients within groups (Raudenbush & Bryk, 2002). The intra-class correlations were computed and negative values indicated a slight negative non-independence ($r = -.001$). This is not uncommon due to small group processes of differentiation sometimes known as the 'boomerang effect' (Kenny, Mannetti, Pierro, Livi, & Kashy, 2002). Therefore, the individual scores were treated as repeated measures in the group with a compound symmetry covariance structure, indicating that there is no difference in the degree of non-independence between any pair of group members (Kenny *et al.*, 2002).

In order to test the hypothesis that older age, lower activation and autistic preoccupation symptoms, greater insight, and higher social functioning would predict client-rated group alliance, multi-level models were estimated using a random effects regression analysis (see Table 4 for a summary of the results). We focused on only two group level predictors, insight and social functioning, because these variables are consistent predictors of therapeutic alliance among individuals with schizophrenia (Couture *et al.*, 2006; Dunn *et al.*, 2006; Frank & Gunderson, 1987; Svensson & Hansson, 1999). Group level analyses allow for investigating the effects of other group member characteristics on an individual's group alliance. After controlling for the

Table 4. Hypothesized predictors of group alliance

Predictor	Estimate	Standard error	df	t	p
Age	−.001	0.02	43	−0.07	.95
Activation factor	1.43	1.67	43	0.86	.40
Autistic preoccupation factor	−3.53	1.29	43	−2.74	.009
Insight (individual)	−.01	0.57	43	0.02	.98
Insight (group mean)	7.53	1.95	7	3.86	.006
Social functioning (individual)	−.37	0.17	43	−2.21	.03
Social functioning (group mean)	−.38	0.29	7	−1.29	.24

hypothesized predictor variables, the degree of correlation between residuals within groups was −.01.

The average level of insight within the group was a significant positive predictor of alliance [$t(7) = 3.86, p = .006$]. Individual autistic preoccupation was also a significant predictor of alliance; lower ratings of autistic preoccupation predicted a stronger group alliance [$t(43) = -2.74, p = .009$]. Additionally, individual level of social functioning was a significant predictor but in the opposite hypothesized direction; lower social functioning predicted a stronger group alliance [$t(43) = -2.21, p = .03$]. However, age, activation, individual insight, and group social functioning were not statistically significant predictors of group alliance. Overall, the hypothesized variables accounted for 17% of the variance in group alliance.

Follow-up analyses examined whether treatment group (CBT or ST) had a main or interactive impact on group alliance. Analyses revealed that there was no main treatment group effect; thus, group alliance ratings were not different in CBT versus ST [$t(8) = 0.15, p = .89$]. In addition, there were no significant interactions between any of the predictor variables and treatment type.

Relationship with treatment engagement and attendance

As a first step in examining the relationship between group alliance and treatment engagement, analyses were conducted to determine whether treatment group had a differential impact on attendance or treatment engagement (as measured by the PTCS). The results showed no significant group effects on the PTCS [participation: $t(58) = -0.48$, $p = .63$; attendance: $t(58) = -0.11$, $p = .91$] or number of sessions missed [$t(56) = -0.38, p = .71$]. Participants attended an average of 8.3 sessions of CBT and 7.9 sessions of ST.

Then, Pearson correlations were computed between group alliance, PTCS subscales, and number of sessions missed (log transformed). As displayed in Table 5, stronger group alliance was significantly associated with fewer sessions missed and higher ratings of treatment engagement on the PTCS.

Table 5. Correlations between group alliance, PTCS, and sessions missed

	Attendance (PTCS)	Participation (PTCS)	# of Sessions missed
Group alliance (WAI-G)	.42 (p < .01)	.45 (p < .01)	−.45 (p < .01)
Attendance (PTCS)		.86 (p < .01)	−.76 (p < .01)
Participation (PTCS)			−.59 (p < .01)

Discussion

The primary purpose of this study was to investigate the client characteristics that predict group alliance among individuals with schizophrenia, and to investigate the relationship between group alliance and therapeutic engagement. To examine these issues, an existing measure of therapeutic alliance, the WAI, was modified for use in a group therapy context. The results showed that predictors of group alliance included a relatively higher level of average group insight and a lower individual level of autistic preoccupation, which were consistent with the study's hypotheses. However, a lower individual level of social functioning also predicted stronger group alliance, which was inconsistent with the study's hypotheses. The other hypothesized baseline variables (i.e. age, activation, individual insight, group social functioning) did not significantly predict group alliance. Finally, stronger group alliance was related to fewer sessions missed and higher therapist ratings of treatment compliance. These findings are discussed in more detail below.

This study found that individuals reported a stronger alliance when they were members of groups with other clients high in insight. This is consistent with research on individual therapy and suggests that insight is an important predictor of therapeutic alliance, irrespective of treatment modality (Dunn *et al.*, 2006; Svensson & Hansson, 1999). Insight may be associated with group alliance by increasing 'universality'. When many group members recognize their mistaken judgments, this may lead to feelings of closeness through sharing common experiences. Yalom (1995) designated universality as one of the therapeutic factors unique to group therapy and which has been rated as important to clients with severe mental illnesses (Crouch, Bloch, & Wanlass, 1994). In addition, clients who are low in insight have been found to have more difficulties getting along with others and behaving in a socially appropriate manner during a work treatment programme (Lysaker, Bell, Milstein, Bryson, & Beam-Goulet, 1994). Therefore, groups relatively high in insight may be more likely to have members who share agreement on the tasks and goals of therapy and who are interpersonally skilled, which facilitates group bonding.

This study also found that individuals who were lower in autistic preoccupation reported stronger ratings of alliance with their group. Lower autistic preoccupation has also been found to predict therapeutic alliance in the individual treatment of schizophrenia (Couture *et al.*, 2006). Taken together, these findings suggest that symptoms of cognitive disorganization (which form the autistic preoccupation factor) may impair the process of forming an alliance with others in a treatment setting.

Individuals lower in social functioning were found to report stronger group alliance. This finding was unexpected given the research on individual therapy which has shown that higher baseline social functioning predicted a stronger therapeutic alliance for individuals with schizophrenia (Couture *et al.*, 2006; Frank & Gunderson, 1987). However, it may be that participants low in social functioning, who enter group therapy, are particularly open to forming an alliance due to the lack of a personal social network.

Most of the other client characteristics predictive of the therapeutic alliance in individual therapy for clients with schizophrenia (i.e. age, activation, individual insight, group social functioning) were not significant predictors of group alliance in this study. In addition, only 17% of the variance in group alliance was explained by the selected client characteristics in this study. Thus, a more complete understanding of group alliance might need to include factors such as the characteristics of the other clients and therapists in the group.

The hypothesis that a stronger group alliance would be associated with treatment engagement was supported. Clients who had stronger group alliance ratings missed fewer group therapy sessions and were rated as more engaged in therapy by therapists,

which are indications of treatment compliance (Corrigan, Liberman, & Engel, 1990). This finding is consistent with previous research that found better attendance to be associated with stronger therapeutic alliance in both individual therapy (Frank & Gunderson, 1990) and group therapy (Johnson, in press). This finding is potentially important in light of the well-established 'dose–response' effect observed in psychotherapy research; longer duration of treatment is associated with greater therapeutic change (Westen, Novotny, & Thompson-Brenner, 2004). As greater insight is associated with lower drop-out rates, this suggests that group alliance might mediate the relationship between insight and attendance (Lysaker *et al.*, 1994).

Findings from this study have important treatment implications with respect to group therapy for schizophrenia. First, the WAI-G is a reliable measure of group alliance in clients with schizophrenia, and ratings on this measure may have promise in predicting who will terminate treatment prematurely. Second, study results lend some preliminary support to the use of insight as a key factor in determining group composition. It seems that a client can form a stronger group alliance when placed in a group with members high in insight rather than low in insight. For example, a client will tend to bond more with others who are also self-reflective about unusual experiences and able to correct mistaken judgments. Even a client low in insight will likely rate alliance as stronger when he can benefit from processes such as 'interpersonal learning', whereby that client can gain insight through input from other group members high in insight (Yalom, 1995). Third, group therapists should be mindful that clients high in cognitive disorganization may have more difficulty forming an alliance with the group. This suggests that some clients may benefit from cognitive remediation-type exercises prior to joining group-based treatments, which might facilitate both skill acquisition and relationship formation (McGurk, Twamley, Sitzer, McHugo, & Mueser, in press). Lastly, the role of social functioning in forming group alliance should be explored in future research, particularly with measures of specific social skill and community functioning. The current findings suggest that clients low in social functioning may benefit from a group therapy modality as it provides the social support/network that they lack in their daily lives.

This study has some limitations that should be addressed in future research. First, therapeutic alliance in group therapy is composed of both individual and group alliance (Gillaspy *et al.*, 2002). However, this study did not assess client-rated individual alliance and was therefore unable to directly compare how client characteristics differentially predicted individual and group alliance. In addition, future research should examine whether group or individual alliance more strongly predicts treatment engagement and outcome. Second, research on individual therapy with this population suggests that therapist-rated alliance is a stronger predictor of therapeutic outcome than client-rated alliance (Gehrs & Goering, 1994; Neale & Rosenheck, 1995). However, the current study only assessed client-rated group alliance.[1] And third, group alliance should be directly compared to other related constructs such as group cohesion and group climate to determine theoretical differences and overlap.

In sum, this study showed that a client with schizophrenia is more likely to form a strong group alliance when there is a high average level of insight within the group, and when the individual has lower autistic preoccupation and social functioning. The findings also indicate that many of the hypothesized predictors of alliance in individual treatment of schizophrenia may not be applicable to a group format, with the exception

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[1] *Therapist-rated group alliance was unreliably assessed often months after the completion of the group therapy. Therefore, future research should have concurrent assessments of both client- and therapist-rated group alliance.*

of insight and autistic-like symptoms. This may be due to the fact that individual and group therapy are viewed by many researchers to be distinct therapeutic approaches with related, but different, mechanisms of change (Kivlighan, Coleman, & Anderson, 2000; Yalom, 1995). This is exemplified by the study's finding that lower social functioning predicted stronger group alliance, whereas research on individual therapy demonstrates higher social functioning as a predictor of stronger therapeutic alliance. In addition, findings suggest that stronger group alliance is associated with better treatment compliance and engagement.

Acknowledgements

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