

**Therapeutic alliance in psychological therapy for people with recent onset psychosis
who use cannabis**

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ABSTRACT

Background

This paper examines the role of therapeutic alliance in predicting outcomes in a Randomised Controlled Trial of Motivational Interviewing and Cognitive Behavioural Therapy (MICBT) for problematic cannabis use in recent onset psychosis.

Methods

All clients were participating in a three arm pragmatic rater-blind randomised controlled trial of brief MICBT plus standard care compared with longer term MICBT plus standard care and standard care alone. Participants completed measures to assess clinical symptoms, global functioning and substance misuse at baseline, 4.5 months, 9 months and 18 months. Clients and therapists completed the Working Alliance Inventory approximately one month into therapy. Client alliance data was available for 35 participants randomised to therapy and therapist alliance data was available for 52 participants randomised to therapy.

Results

At baseline, poorer client-rated alliance was associated with more negative symptoms, poorer insight and greater cannabis use, whereas poorer therapist-rated alliance was only associated with amount of cannabis used per cannabis using day. Alliance ratings were also positively associated with amount of therapy: client-rated alliance was higher in the longer compared to the briefer therapy; therapist-rated alliance was associated with greater number of sessions attended (controlling for type of therapy) and therapy completion. In predicting outcome, client-rated alliance predicted total symptom scores and global functioning scores at follow-up. Neither client nor therapist alliance predicted changes in substance misuse at any time point.

Conclusions

Findings demonstrate that individuals with psychosis and substance misuse who form better alliances with their therapists gain greater benefits from therapy, at least in terms of improvements in global functioning.

Key words: alliance; psychosis; cognitive behavioural therapy; motivational interviewing; substance misuse

Highlights

Poor alliance was associated with negative symptoms, poor insight and more cannabis use

Alliance was better in longer compared to shorter-term therapy

Client-rated alliance predicted improvements in symptoms and functioning

1. INTRODUCTION

Cannabis use is common in young people experiencing early psychosis and is associated with worse outcomes [1, 2]. The early stages of psychosis are critical for determining long-term outcomes and consequently research has focused on trialling psychological therapies to reduce cannabis use during this period. Studies have either evaluated Motivational Interviewing (MI) or a combination of MI and Cognitive Behavioural Therapy (MICBT) [3], but there is limited evidence of improvements in cannabis or clinical outcomes. It has been suggested that due to the complexity of dual diagnosis, longer, more intensive treatments are needed [4]. However, in a recent trial involving a long-term intervention of MICBT (24 sessions delivered over 9 months) participants only attended a median of 50% of sessions and across both the long-term intervention and a briefer comparison therapy 20% of participants attended less than 2 sessions [5].

Engagement difficulties are common in psychosis and can be even more problematic in the context of co-occurring substance misuse [3]. The emotional and collaborative relationship between clients and therapists, commonly referred to as ‘therapeutic alliance’ is an important predictor psychotherapy outcomes [6]. A positive therapeutic alliance is associated with treatment engagement and retention in clients with substance misuse [7] and early psychosis [8]. Alliance has also been shown to predict treatment outcomes in both established [9, 10] and early psychosis [8, 11].

Evidence suggests that different factors predict client versus therapist alliance, and that predictors of alliance vary according to the client group or therapy provided [12-16].

However, poorer functioning, more negative symptom profiles and poorer ‘insight’ defined in

terms of the degree to which clients agreement with an ‘illness model’ seem to be among the most consistent predictors.

This paper examines the role of therapeutic alliance in predicting outcomes in a RCT of MICBT for problematic cannabis use in recent onset psychosis. The trial found that neither an extended nor a brief intervention conferred benefit over standard care in terms of reductions in frequency or amount of cannabis use, nor any of the symptom or functioning outcomes assessed [5]. In the present study, we first investigated whether any participant baseline characteristics predict therapeutic alliance. Secondly, we analysed the relationship between therapeutic alliance and treatment outcomes, including engagement in therapy sessions and drop out. In line with previous studies, we hypothesised that poorer client functioning, poorer insight, more negative symptoms and greater substance misuse would be related to worse alliance. We also hypothesised that a stronger therapeutic alliance would predict session attendance, retention in therapy and outcomes for both symptoms and substance misuse. As alliance is a predictor of outcome across therapeutic modalities and both treatments specifically focused on developing a strong therapeutic alliance with clients, we did not predict that type of therapy would influence alliance scores.

2. METHOD

2.1. Participants

Clients were participating in a three-arm pragmatic rater-blind RCT of brief MICBT compared with longer-term MICBT and standard care alone (Figure 1). Trial participants were recruited from Early Intervention Services and inclusion criteria were: aged 16-35; DSM-IV diagnosis for non-affective psychosis; DSM-IV diagnosis of cannabis dependence or abuse; cannabis use of at least one day per week in at least half the weeks in the past three

months; stable accommodation; English speaking; no history of organic factors implicated in the aetiology of psychotic symptoms; and informed consent. Client alliance data was available for 35 of 75 participants randomised to therapy and therapist alliance data was available for 52 of 75 participants randomised to therapy.

2.2.Measures

2.2.1 Demographic information

Demographic information and years of cannabis misuse were collected at baseline via self-report. Duration of psychosis was obtained from casenotes by trained assessors.

2.2.2 Therapeutic alliance

Therapeutic alliance was assessed by therapist and client versions of the 12-item Working Alliance Inventory (WAI[17]) completed approximately one month into therapy [mean number of sessions for therapist WAI = 3.76 (1.32) and mean number of sessions for client WAI = 4.17 (1.47)]. Items are rated on a scale ranging from 1 (never) to 7 (always), with higher scores reflecting a stronger alliance. An overall index of alliance can be computed across the items (range 7 – 84).

2.2.3 Assessment of outcomes

All substance misuse, symptom and functioning outcome measures were completed at baseline, at 4.5 months (end of brief therapy), 9 months (end of longer-term therapy) and 18 months after randomisation.

2.2.4 Substance misuse

Substance misuse was assessed using the Time Line Follow Back assessment (TLFB[18]). The primary outcome for the trial was number of days abstinent from cannabis in the preceding 30 days, but additional outcomes were also recorded including number of days abstinent from all substances over the preceding 30 days, average amount of cannabis used per cannabis using day and changes in these measures from baseline to each follow-up. The TLFB has good reliability and validity in dual diagnosis populations [19].

2.2.5 Symptoms and functioning

The Positive and Negative Syndrome Scale (PANSS[20]) was used to assess symptoms associated with psychosis. Each of the 30 items is rated on a scale, ranging from 1 (absence of psychopathology) to 7 (extreme psychopathology). Functioning was assessed using the Global Assessment of Functioning Scale (GAF[21] which can be used to derive total scores and subscale scores for symptoms and disability with higher scores representing better functioning (all ranges: 0-100). All research assistants were trained in rating the PANSS and GAF and high levels of inter-rater reliability with experienced raters were maintained throughout (all ICCs \geq .85).

2.2.6 Insight

Insight was assessed using the Birchwood Insight Scale (BIS[22]). This eight-item self-report scale was designed to be sensitive to changes in levels of insight, and captures three dimensions of insight: perceived need for treatment, awareness of illness and re-labelling of symptoms as pathological. Higher scores indicate greater levels of insight (range 0-12). The BIS was completed at baseline.

2.3 Procedure

Following ethical approval, written informed consent and screening, participants completed baseline assessment measures. Participants were then randomly allocated to one of the trial arms. Therapists were instructed to complete the WAIs after the client's third therapy session (approximately one month into therapy) and also to provide WAIs to clients. Client WAIs were then placed in sealed stamped envelopes addressed to the trial manager. The therapists and clients were assured that they would not be informed of each other's ratings. Outcome assessments were completed with researchers blind to treatment allocation.

2.4 Intervention

The psychological therapy consisted of integrated MICBT and is described more fully in a paper reporting the main outcomes from the trial [5]. Participants in the brief intervention condition were offered up to 12 sessions of MICBT over 4.5 months and participants in the long-term intervention condition were offered up to 24 sessions over 9 months. The therapy was delivered by three therapists, who were trained in both CBT and MI and regularly supervised.

2.5 Data analysis

Associations between continuous parametric variables were assessed using Pearson's correlations or Spearman Rho correlations (TLFB variables). The association between alliance and therapy completion and alliance and treatment arm was assessed using independent t-tests. The role of alliance in predicting clinical outcomes was assessed using regression models controlling for baseline scores on each respective dependent variable. Data were analysed in accordance with intention to treat principles, using all available data.

3. RESULTS

3.1. Sample characteristics

A total of 110 participants were randomised. Thirty-five patients were allocated to standard care, 38 were allocated to brief therapy and 37 were allocated to longer-term therapy.

Therapist WAI (T-WAI) data were available for 52 of the 75 therapy clients (69%) and client WAI (C-WAI) data were available for 35 of the 75 therapy clients (47%). Clients with missing WAIs had significantly lower therapist-rated alliance [$t = 2.055 (50)$, $p = .045$; C-WAI completed: Mean = 61.29 (8.71); C-WAI missing: Mean = 55.29 (11.94)] and a longer history of psychosis [$t = -2.025 (73)$, $p = .046$; months of psychosis: C-WAI completed: Mean = 15.34 (11.53); C-WAI missing: Mean = 21.90 (15.85)]. Completion of T-WAIs were unrelated to any of the variables assessed at baseline and did not differ between the treatment arms. For dyads with missing data, non-completion was primarily due to non-attendance or therapists reporting that administering an alliance measure might have an adverse effect on therapy at that point in time. Sample characteristics of clients with WAI data are presented in Table 1. As reported in the main paper of the trial, mean alliance scores were for both therapists and clients were comparable with alliance reported in previous psychosis trials.

3.2. Therapist and client ratings of alliance in brief versus longer-term therapy

There were no significant differences between therapist-rated alliance in the brief compared to the longer-term therapy ($t = .555 (50)$, $p = .581$). However, clients rated the alliance as significantly better in the longer-term therapy compared to the brief therapy [$t = 3.177 (33)$, $p = .003$; C-WAI longer-term therapy: Mean = 67.07 (8.16); C-WAI brief therapy: Mean = 58.00 (8.25)], despite rating alliance at similar time points in both therapies and no statistically significant differences between the groups on any baseline measures. There was a

strong agreement between therapist and client scores ($r = .60, p < .001$); an effect that was evident across both therapies.

3.3. Alliance and baseline measures (See Table 2)

We found no significant associations between T-WAI and any of the measures collected at baseline, including demographic and illness-related variables, with the exception of average amount of cannabis per cannabis using day in preceding 30 days (grams), suggesting that therapists rated the alliance as poorer if clients reported using more cannabis. As predicted, there was a significant correlation between poorer C-WAI and more negative symptoms, poorer insight and greater cannabis use. However, there were no significant associations between C-WAI and client functioning or measures of all substance misuse.

3.4. Alliance, session uptake and retention

There was a significant positive correlation between number of sessions attended and T-WAI ($r = .590, p = < .001$) which was maintained when controlling for therapy type (partial correlation: $r = .611, p < .001$). There was a positive trend of an association between C-WAI and number of sessions attended, but this finding did not reach significance ($r = .306, p = .074$). We also looked at whether alliance was related to therapy completion (assessed in terms of the presence of an end of therapy summary as per protocol). There were only 3 completed C-WAIs for people who dropped out of therapy so it was not possible to compare groups of completers and non-completers on client-rated alliance. There was, however, a significant group difference for completers and non-completers in terms of T-WAI, with those who completed therapy reporting higher levels of alliance [$t = 4.007 (40), p < .001$; Completers: Mean = 62.78 (8.53); Non-completers: Mean = 49.30 (11.51)].

3.5. Alliance and symptom outcomes

We carried out a series of regression analyses to explore the influence of alliance on symptom outcomes controlling for baseline measures. T-WAI was not a statistically significant predictor of PANSS total scores or GAF total scores at any of the follow-up assessments (data not shown). C-WAI statistically significantly predicted PANSS total scores at 9 months and 18 months, but associations between C-WAI and PANSS total scores only approached significance at the 4.5-month follow-up. C-WAI was a significant predictor of GAF total scores at all three follow-ups, suggesting that better alliance from the client perspective was associated with better functioning (see Table 3). These significant findings were replicated for the GAF symptoms subscale at all three follow-ups and GAF disability at the 4.5 and 18 month follow-ups (data not shown).

3.6. Alliance and substance misuse outcome

We looked at whether alliance was significantly correlated with changes in substance misuse at all three time points and found no statistically significant effects (See Table 4).

4. DISCUSSION

This study investigated baseline predictors of therapeutic alliance and the relationship between alliance and outcomes in clients with recent onset psychosis participating in a trial of MICBT for cannabis misuse. At baseline, we found that poorer client-rated alliance was associated with more negative symptoms, poorer insight and greater cannabis use, whereas poorer therapist-rated alliance was only associated with amount of cannabis used per cannabis using day. Client-rated alliance was also higher in the longer compared to the briefer therapy. We found that therapist-rated alliance was associated with both number of sessions attended (controlling for type of therapy) and therapy completion. However, client-

rated alliance but not therapist-rated alliance predicted total symptom scores and global functioning scores at follow-up. Neither client nor therapist alliance predicted changes in substance misuse at any of the time points.

Findings of associations between client-rated alliance and both negative symptoms [23, 24] and insight [10-12, 14, 16, 24-26] are consistent with a number of other studies. Is it possible that feeling positively about the relationship with the therapist motivated the person to be more active in their everyday lives and thus exhibit less negative symptoms. Similarly it is possible that those with more insight felt that the relationship and therapy could be useful and therefore invested more into it. We also found associations between cannabis use and alliance from both clients' and therapists' perspectives possibly because consuming cannabis interferes with the development of a therapeutic bond between therapist and client and the client's ability to focus on the therapeutic tasks. It is however noteworthy that none of the other substance misuse variables, including frequency of use were related to alliance.

Barrowclough et al [12] did not find associations between substance misuse and alliance, but their sample comprised people using alcohol and a range of other substances with long histories of psychosis. To our knowledge no previous studies of alliance have focused specifically on therapy for cannabis use in the early stages of psychosis.

Both the brief and longer-term therapy focused on developing a strong therapeutic alliance with clients and we did not predict that type of therapy would influence alliance scores.

Although alliance scores were relatively high in both therapies and comparable to other studies of therapeutic alliance in psychosis [11, 12, 25], unexpectedly, clients-rated alliance was higher in the longer-term therapy. This finding could not be accounted for by other assessed differences in characteristics of participants in each group as the groups were comparable on other baseline measures and the timings of alliance ratings were similar in both groups. It is possible that clients randomised to the longer-term intervention had greater

expectations for the therapy and therefore felt more positively towards their therapists. It is also possible that therapists were able to devote more time to building up alliance in the early sessions of the longer-term therapy compared to the briefer therapy where there may have been an increased pressure to focus on other therapeutic tasks.

Although we identified possible predictors of alliance, a substantial degree of variance in the alliance was not explained by the variables assessed. The failure to identify strong predictors of alliance in psychosis in this study and in previous research is important as it highlights that it is possible for individuals with psychosis to develop strong relationships with therapists, even in the context of substance misuse. One study of CBT for psychosis showed that clients' perceptions of therapists' interpersonal qualities, such as empathy and trustworthiness may play a more important role than client characteristics and a need for further research to investigate therapist qualities as predictors of alliance [15].

Although a number of studies have looked at cross-sectional associates of alliance in people with psychosis, this is one of the few studies to explore the role of alliance in this client group in predicting outcomes. Although client alliance was unrelated to substance misuse outcomes, early client alliance predicted total symptom scores at the 9-month and 18-month follow-ups and general functioning scores at all three follow-ups. A previous study of group CBT for early psychosis similarly reports associations between client alliance and clinical outcomes [11]. Although it might be argued that early improvements in symptoms and functioning may have confounded alliance ratings, evidence from well-designed studies in the general psychotherapy literature suggests that associations between early alliance and outcome is not accounted for by the effect of symptom change early in therapy [27]. The consistent associations between alliance and subsequent functioning (but not between baseline

functioning and alliance) are particularly interesting and suggest that positive therapeutic relationships may help patients improve relationships and functioning outside of therapy.

Consistent with other research, clients' assessment of alliance was a better predictor of outcomes than therapists' assessments [11]. However, in line with these studies, therapists' ratings of alliance were associated with clients' attendance and completion of therapy, suggesting that therapists perceived that they had developed a better relationship with those who were more likely to attend.

Results from studies investigating clients' and therapists' agreement about the quality of the therapeutic alliance have been mixed, with some reporting a significant association between their ratings [11, 16, 28] and others not [12, 29]. Tyron et al [30] report a meta-analysis of the association between client and therapist alliance across a range of different client groups and identify a moderate relationship between the two. We found reasonably high concordant rates between client and therapist ratings of alliance in this study which was greater than those reported in previous psychosis studies. It could be argued that the therapist and clients in this study were particularly open about their perceptions of the therapeutic relationship. However, it is also possible that the finding is influenced by missing data, with therapists and clients who had similar perceptions of alliance (and arguably better relationships) being more likely to complete alliance measures. Although we do not have the data to test this hypothesis, we did find that clients with completed alliance measures had significantly higher alliance scores from the therapists' perspectives compared to those without completed alliance measures.

A number of limitations of this study need to be taken into account. Although in the range of other alliance studies [12, 23, 24, 29], our sample was relatively small resulting in the possibility of Type II errors. It is noteworthy that some associations, for example, associations between client alliance and number of sessions attended, may have reached significance in larger samples. Conversely, it could be argued that the large number of analyses might have resulted in Type I errors. Readers should therefore be guided by our effect sizes in interpreting the meaning of findings. The generalizability of our findings may be questioned. All patients were participating in a RCT of MICBT thus limiting generalizability to naturalistic treatment settings in particular. A related issue was that not all potential participants completed the alliance assessment and clients with missing data differed from those with complete data. Missing data is a significant problem in alliance studies. In preparation for future trials, further work should ascertain the reasons for both therapist and client reluctance to complete alliance data and attempts should be made to overcome identified barriers. Further research would also benefit from measuring a wider range of experiences of the therapeutic relationships, for example, including those clients who did not complete therapy and may potentially experience the therapeutic relationship as less positive. An additional problem with our study is that we only report alliance ratings at one-point in time. It is known that therapeutic alliance can change over time [11, 31]. Previous studies measuring alliance over time have suggested that both fluctuations in alliance are themselves predictive of outcomes and that good therapeutic alliances are especially important at specific moments in therapy, namely when more difficult psychological work is done [11, 31].

Limitations withstanding, our findings highlight a number of clinical implications. First, given the role of negative symptoms, poor insight and amount of cannabis use in predicting earlier alliance, therapists may need to spend more time engaging clients with these

presentations in the therapy in order establish stronger therapeutic bonds. Second, therapists may need to ensure that problems in these domains are addressed early on in therapy. For example, behavioural activation may be a useful strategy to help clients with negative symptoms develop levels of activity, whereas psychoeducation and exploring models of psychosis early on in therapy may benefit those with poor insight. Tackling cannabis use early on with motivational interviewing strategies may be particularly important for heavy users. Third, given the role of early client alliance in therapy outcomes, regularly assessing client alliance and providing additional supervision and support to therapists with clients with lower alliance scores to help therapists maximise therapeutic bonds and engagement may improve outcomes.

5. CONCLUSION

To our knowledge this is the first study to examine therapeutic alliance in a substance misusing group in the early stages of psychosis. Our findings add to the growing alliance and psychosis literature by demonstrating that it is possible for individuals with psychosis to develop strong relationships with their therapists even in the context of substance misuse and that those who do form better alliances gain greater benefits from therapy, at least in terms of improvements in functioning. Alliance is an important construct to measure in RCTs of psychological treatments for psychosis and future studies should focus on increasing therapist and client completion of alliance measures and assessing alliance at multiple time points.

Table 1: Sample characteristics for trial participants at baseline with WAI data

N = 52	
Age in years, mean (SD)	23.76 (4.87)

Gender: male, n (%)	47	(90.4)
Living arrangements, n (%)		
Alone/ house-share/ hostel	19	(36.5)
With partner or family	33	(63.5)
Ethnicity, n (%)		
White	49	(94.2)
Black and Minority Ethnic	3	(5.8)
Attended higher education, n (%)	27	(51.9)
Employment, n (%)		
Unemployed/ retired	42	(80.8)
Employed/ self-employed	3	(5.8)
Student	7	(13.5)
History of psychosis (months), median (range)	12,41	(1.35 – 55.71)
Duration of Untreated Psychosis, n (%)		
< 4 months	15	(28.8)
>4 months	32	(61.5)
Baseline Diagnosis (SCID-I)		
Schizophrenia	26	50.0
Schizophreniform	3	5.8
Schizoaffective	7	13.5
Delusional Disorder	6	11.5
Substance induced psychosis	1	1.9
Psychotic Disorder not otherwise specified	9	17.3
PANSS, mean (SD),		
Positive	14.77	(4.01)
Negative	13.83	(4.63)
General	34.42	(6.97)
Total	63.02	(12.99)
Global functioning (GAF), mean (SD)	36.87	(8.52)
Insight (BIS), mean (SD)	12.45	(3.04)
Substance use disorder (SCID-I), n (%)		
Cannabis abuse	8	(15.4)
Cannabis dependence	44	(84.6)
History of cannabis use (years), mean (SD)	9.91	(4.78)
Number of days abstinent from cannabis in preceding 30 day period, median (range)	12	(0-30)
Number of days abstinent from all substances in preceding 30 day period, median (range)	7	(0-30)
Average amount of cannabis per cannabis using day in preceding 30 days (grams), median (range)	1.33	(.04- 7.3)
Client alliance (WAI), mean (SD),	61.97	(9.25)
Therapist alliance (WAI), mean (SD),	59.33	(10.17)

Table 2: Correlations between WAI scores and baseline measures

	WAI-client	N = 35	WAI-therapist	N = 52
	r	P	R	P
PANSS positive	-.22	.216	-.12	.389
PANSS negative	-.41	.013	-.25	.070
PANSS general	-.32	.065	-.12	.415
PANSS total	-.38	.023	-.19	.177
Global functioning (GAF)	.29	.088	.05	.724
Insight (BIS)	.41	.015	-.14	.320
Number of days abstinent from cannabis in preceding 30 days ¹	.37	.027	.18	.194
Number of days abstinent from all substances in preceding 30 days ¹	.30	.081	.08	.592
Average amount of cannabis per cannabis using day in preceding 30 days (grams) ¹	-.48	.005	-.31	.033

¹Spearman rho reported

Table 3: Regression models for client alliance, symptoms and functioning at all time points

PANSS total 4.5 months	Adjusted R ² = .47, F = 10.45, df = 2, 24, p = 001			
	Beta	T	P	95% confidence interval

PANSS baseline	.473	2.882	.008	.147 - .891
Client alliance	-.334	-2.034	.053	-1.074 - .008
PANSS total 9 months	Adjusted R ² = .42, F = 10.49, df = 2, 24, p = .001			
	Beta	T	P	95% confidence interval
PANSS baseline	.058	.326	.747	-.324 - .446
Client alliance	-.65	-3.631	.001	-1.623 - -.447
PANSS total 18 months	Adjusted R ² = .46, F = 11.58, df = 2, 23, p < .001			
	Beta	t	P	95% confidence interval
PANSS baseline	.398	2.328	.029	.044 - .753
Client alliance	-.417	-2.435	.029	-1.118 - -.091
GAF total 4.5 months	Adjusted R ² = .19, F = 4.13, df = 2, 24, p = .029			
	Beta	T	P	95% confidence interval
GAF baseline	.240	1.351	.189	-.177 - .848
Client alliance	.415	2.334	.028	.049 - .805
GAF total 9 months	Adjusted R ² = .27, F = 5.71, df = 2, 24, p = .009			
	Beta	T	P	95% confidence interval
GAF baseline	.107	.557	.583	-.475 - .827
Client alliance	.509	2.658	.014	.157 - 1.246
GAF total 18 months	Adjusted R ² = .57, F = 17.54, df = 2, 23, p = <.001			
	Beta	t	P	95% confidence interval
GAF baseline	.515	3.521	.002	.463 - 1.781
Client alliance	.398	2.719	.012	.170 - 1.248

Table 4: Correlations between WAI scores and percentage of change in substance misuse

	WAI-client		WAI-therapist	
	r	P	R	P
Percentage of reduction in days used cannabis at 4.5 months	.12	.554	.17	.288
Percentage of reduction in days used cannabis at 9 months	-.02	.604	.14	.394
Percentage of reduction in days used cannabis at 18 months	-.02	.907	.20	.234
Percentage of reduction in days used all substances at 4.5 months	.19	.298	.26	.081
Percentage of reduction in days used all substances at 9 months	-.06	.759	.21	.194
Percentage of reduction in days used all substances at 18 months	-.12	.528	.16	.307

Spearman rho reported

[1] Lambert M, Conus P, Lubman D, Wade D, Yuen H, Moritz S, et al. The impact of substance use disorders on clinical outcome in 643 patients with first-episode psychosis. *Acta Psychiatr Scand.* 2005; **112**:141-8.

[2] Sorbara F, Liraud F, Assens F, Abalan F, Verdoux H. Substance use and the course of early psychosis: a 2-year follow-up of first-admitted subjects. *Eur Psychiatry.* 2003; **18**:133-6.

[3] Hunt GE, Siegfried N, Morley K, Sitharthan T, Cleary M. Psychosocial interventions for people with both severe mental illness and substance misuse. *Cochrane Database of Systematic Reviews.* 2013.

[4] Baker AL, Hides L, Lubman DI. Treatment of cannabis use among people with psychotic or depressive disorders: a systematic review. *J Clin Psychiatry.* 2010; **71**:247-54.

- [5] Barrowclough C, Marshall, M., Gregg, L., Fitzsimmons, M., Tomenson, B., Warburton, J & Lobban, F. A phase specific psychological therapy for people with problematic cannabis use following a first episode of psychosis: A Randomised Controlled Trial. *Psychol Med.* in press.
- [6] Martin DJ, Garske JP, Davis MK. Relation of the therapeutic alliance with outcome and other variables: a meta-analytic review. *J Consult Clin Psychol.* 2000; **68**:438-50.
- [7] Meier PS, Barrowclough C, Donmall MC. The role of the therapeutic alliance in the treatment of substance misuse: a critical review of the literature. *Addiction.* 2005; **100**:304-16.
- [8] Lecomte T, Spidel A, Leclerc C, MacEwan GW, Greaves C, Bentall RP. Predictors and profiles of treatment non-adherence and engagement in services problems in early psychosis. *Schizophr Res.* 2008; **102**:295-302.
- [9] Priebe S, Cooney., Adedeji & McCabe R. Does the Therapeutic Relationship Predict Outcomes of Psychiatric Treatment in Patients with Psychosis? A Systematic Review. *Psychother Psychosom.* 2011; **80**:70-7.
- [10] Svensson B, Hansson L. Therapeutic alliance in cognitive therapy for schizophrenic and other long-term mentally ill patients: development and relationship to outcome in an in-patient treatment programme. *Acta Psychiatr Scand.* 1999; **99**:281-7.
- [11] Lecomte T, Leclerc C, Wykes T. Group CBT for Early Psychosis-Are There Still Benefits One Year Later? *Inter J Group Psychother.* 2012; **62**:309-21.
- [12] Barrowclough C, Meier P, Beardmore R, Emsley R. Predicting therapeutic alliance in clients with psychosis and substance misuse. *J Nerv Ment Dis.* 2010; **198**:373.
- [13] Couture SM, Roberts DL, Penn DL, Cather C, Otto MW, Goff D. Do baseline client characteristics predict the therapeutic alliance in the treatment of schizophrenia? *J Nerv Men Dis.* 2006; **194**:10-4.
- [14] Dunn H, Morrison AP, Bentall RP. The relationship between patient suitability, therapeutic alliance, homework compliance and outcome in cognitive therapy for psychosis. *Clin Psychol Psychother.* 2006; **13**:145-52.
- [15] Evans-Jones C, Peters E, Barker C. The therapeutic relationship in CBT for psychosis: client, therapist and therapy factors. *Behav Cogn Psychother.* 2009; **37**:527-40.
- [16] Johnson DP, Penn DL, Bauer DJ, Meyer P, Evans E. Predictors of the therapeutic alliance in group therapy for individuals with treatment-resistant auditory hallucinations. *Brit J Clin Psychol.* 2008; **47**:171-84.
- [17] Tracey TJ, Kokotovic AM. Factor structure of the Working Alliance Inventory. *Psychol Assessment: J Consult and Clin Psychol.* 1989; **1**:207-10.
- [18] Sobell LC, Sobell MB. *Timeline follow-back. Measuring alcohol consumption*: Springer; 1992. p. 41-72.
- [19] Hjorthøj CR, Hjorthøj AR, Nordentoft M. Validity of Timeline Follow-Back for self-reported use of cannabis and other illicit substances--systematic review and meta-analysis. *Addict Behav.* 2012; **37**:225-33.
- [20] Kay SR, Flszbein A, Opler LA. The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophr Bull.* 1987; **13**:261-76.
- [21] Hall R. Global assessment of functioning - a modified scale. *Psychosom.* 1995; **36**:267-75.
- [22] Birchwood M, Smith J, Drury V, Healy J, Macmillan F, Slade M. A self-report Insight Scale for psychosis: reliability, validity and sensitivity to change. *Acta Psychiatr Scand.* 1994; **89**:62-7.
- [23] Jung E, Wiesjahn, M., & Lincoln, T. Negative, not positive symptoms predict the early therapeutic alliance in cognitive behavioral therapy for psychosis. *Psychother Res.* 2014; **24**:171-83.
- [24] Wittorf A, Jakobi U, Bechdorf A, Müller B, Sartory G, Wagner M, et al. The influence of baseline symptoms and insight on the therapeutic alliance early in the treatment of schizophrenia. *Eur Psychiatry.* 2009; **24**:259-67.
- [25] Johansen R, Iversen, V., Melle, I., & Hestad, K. Therapeutic alliance in early schizophrenia spectrum disorders: a cross-sectional study. *Ann Gen Psychiatry.* 2013; **12**:14.

- [26] Lysaker PH, Dimaggio G, Buck KD, Callaway SS, Salvatore G, Carcione A, et al. Poor insight in schizophrenia: links between different forms of metacognition with awareness of symptoms, treatment need, and consequences of illness. *Compre Psychiatry*. 2011; **52**:253-60.
- [27] Klein DN, Schwartz JE, Santiago NJ, Vivian D, Vocisano C, Castonguay LG, et al. Therapeutic alliance in depression treatment: controlling for prior change and patient characteristics. *J Consult Clin Psychol*. 2003; **71**:997-1006.
- [28] Bourdeau G, Th eroux L, Lecomte T. Predictors of therapeutic alliance in early psychosis. *Early Interv Psychiatry*. 2009; **3**:300-3.
- [29] Couture SM, Penn DL, Roberts DL. The functional significant of social cognition in schizophrenia: A review. *Schizophr Bull*. 2006; **32**:44-63.
- [30] Shick Tryon G, Collins Blackwell S, Felleman Hammel E. A meta-analytic examination of client–therapist perspectives of the working alliance. *Psychother Res*. 2007; **17**:629-42.
- [31] Lecomte t, Leclerc C, Wykes T, Nicole L, Abdel-Baki A. Understanding process in group cognitive therapy for psychology. *Psychol Psychother*. 2015; **88**: 163-177.

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HELPER Programme (Substance Misuse) - A phase-specific psychological therapy for people with problematic cannabis use following a first episode of psychosis (ReCAP)

<http://www.isrctn.com/ISRCTN88275061>

Conflict of interest

None