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The alliance-outcome relationship in individual psychosocial treatment for schizophrenia and early psychosis: A meta-analysis

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ABSTRACT

The therapeutic alliance, or client-provider relationship, has been associated with better treatment engagement and outcomes for persons with schizophrenia-spectrum disorders (SSDs) and early psychosis in some studies, but not others. We conducted a meta-analysis of the research on alliance in SSDs and early psychosis across a range of interventions and outcomes. Parallel literature searches were conducted in PubMed and PsycINFO databases for articles between inception and 6/11/2020. English-language studies were included if they evaluated the relationship between alliance and a prospective outcome (treatment engagement, medication adherence, functioning, or total, positive, negative, or depressive symptoms) in an individual clinical treatment for SSDs/early psychosis and contained analyzable data. Correlations and partial correlations were meta-analyzed with random effects models to calculate mean across-study correlations and to carry out subsequent homogeneity and moderator variable analyses. Fourteen studies consisting of 2968 participants that assessed six outcomes across six psychosocial treatments were included. Results indicated that better client-rated ($r = 0.20$) and other-rated (i.e., provider- or observer-rated; $r = 0.25$) alliance were associated with better treatment engagement. Treatment type and sample race/ethnicity, but not age, gender, or timing of alliance rating moderated the association between other-rated alliance and engagement. Further, better other-rated alliance was related to improvements in positive ($r = -0.14$) and negative ($r = -0.22$) symptoms. A strong therapeutic alliance is important for both engaging clients with SSDs and early psychosis in treatment and facilitating improvements in positive and negative symptoms. Delivery and monitoring of treatments for this population should include assessment of the therapeutic alliance from multiple perspectives.

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1. Introduction

A high-quality therapeutic alliance, which consists of agreement on goals and tasks of treatment and a collaborative bond between client and provider, has been found to predict better treatment outcomes in both psychotherapy (Flückiger et al., 2018; Horvath et al., 2011; Martin et al., 2000) and psychopharmacological treatment (Wienke Totura et al., 2018). Further, clients who have with a stronger therapeutic alliance with their providers are less likely to drop out of services (Sharf et al., 2010). As such, the alliance may be especially critical in the treatment of persons with schizophrenia-spectrum disorders (SSDs), given the challenges associated with retention and engagement of this population (Dixon et al., 2016; Kreyenbuhl et al., 2009). The two largest and most recent narrative reviews on the alliance-outcome relationship in SSDs have demonstrated that a positive alliance is related to improvement in psychotic symptoms with psychotherapy (Shattock et al., 2018) and to better functioning and treatment adherence across several different individual treatments, including psychotherapy, case management, vocational intervention, and cognitive remediation (Browne et al., 2019b). Further, a review focused on the

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alliance-outcome relationship in pharmacological treatment in this population concluded that a strong alliance is related to reduced hospitalizations and improved symptoms and functioning (Priebe et al., 2011).

Although the existing evidence generally supports a favorable role of the therapeutic alliance in improving treatment outcomes for individuals with SSDs, there have been a number of studies that did not find significant relationships. For example, a high-quality alliance was not predictive of remission status or improvements in symptoms among persons with SSDs receiving psychological therapy or cognitive remediation (Berry et al., 2015; Cella and Wykes, 2019; Dunn et al., 2006; Staring et al., 2011; Svensson & Hansson, 1999). Further, the alliance was not associated with improved general or social functioning in psychological treatment studies of persons with SSDs (Berry et al., 2015; Jung et al., 2014; Svensson & Hansson, 1999). As such, these mixed findings limit firm conclusions as to the strength and magnitude of the alliance-outcome relationship in individual treatment for individuals with SSDs and early psychosis.

The only published meta-analysis on the alliance-outcome relationship in persons with SSDs analyzed associations between alliance and overall symptoms, psychotic symptoms, and therapy engagement across 13 studies including 984 participants receiving individual or group psychological therapy (Bourke et al., 2021). The results illustrated that both client-rated and therapist-rated alliance were significantly associated with reduced global and psychotic symptoms as well as higher therapy engagement. Although the findings of the Bourke et al. (2021) meta-analysis are promising (Bourke et al., 2021), there is a need for a more nuanced review that examines the strength of the alliance-outcome relationship across the broader range of psychosocial interventions provided to people with SSDs (e.g., cognitive remediation, case management, vocational rehabilitation) and that evaluates a more comprehensive set of outcomes (e.g., negative symptoms, functioning).

The present study sought to conduct such a meta-analysis by evaluating the relationship between the therapeutic alliance and multiple outcomes in a wide range of individual treatments for SSDs. Based on findings from prior narrative reviews and the sole published meta-analysis of SSD studies (Bourke et al., 2021; Browne et al., 2019b; Priebe et al., 2011; Shattock et al., 2018), we hypothesized that client-rated and other-rated (i.e., provider- or observer-rated) alliance would be significantly associated with higher treatment engagement, better medication adherence, and with greater improvements over the course of treatment in functioning, total symptoms and positive symptoms. A priori hypotheses were not set with regard to negative or depressive symptoms due to mixed results in prior studies. Should the hypotheses be supported, this meta-analysis would bolster and extend prior research by demonstrating the importance of the alliance in facilitating better engagement and outcomes in psychotherapy and a range of other psychosocial interventions. Refuted hypotheses might suggest that the alliance functions differently across different types of psychosocial treatments and outcomes in this population in light of the significant relationships observed between alliance and engagement and symptoms in psychotherapy studies (Bourke et al., 2021).

2. Methods

This meta-analysis was registered on PROSPERO (CRD42021191681).

2.1. Search strategy

The first author (JB) conducted parallel literature searches in PubMed and PsycINFO databases for articles available online between inception and 6/11/2020 using the search terms ("schizophrenia" OR "psychosis" OR "psychotic" OR "schizophrenia spectrum") AND ("alliance" OR "therapeutic relationship" OR "working relationship"). These search terms were used in our prior large narrative review on the alliance in individual treatment for SSDs and early psychosis (Browne et al., 2019b).

2.2. Inclusion criteria

Studies were included if they met the following criteria: (1) written in or translated into English, (2) empirical study reporting quantitative data (i.e., reviews, case studies, qualitative studies were excluded), (3) at least 60% of sample included persons with SSDs or described as experiencing "first-episode and/or early psychosis,"(Shattock et al., 2018) (4) measured alliance and at least one of seven outcomes of interest (treatment engagement, medication adherence, functioning, total symptoms, positive symptoms, negative symptoms, depressive symptoms), (5) alliance was assessed between client and mental health provider in the context of a defined individual clinical treatment (e.g., psychosocial intervention, medication management, psychotherapy, case management), (6) assessed relationship between alliance and at least one prospective outcome of interest, (7) analyzable numerical data on the alliance-outcome relationship was reported in the published study or was obtained from correspondence between research team and study authors.

2.3. Screening and data extraction procedure

The first and second authors (JB & AW) independently screened all articles using Covidence software ("Covidence systematic review software," n.d.). All discrepancies were discussed between the two reviewers and the last author (MK) was included when consensus could not be reached between the two reviewers. When articles met inclusion criteria 1–6, but did not contain analyzable numerical data on the alliance-outcome relationship in the published manuscript, the first author contacted study authors by email with a request to provide data within one month (requests were sent to authors of 22 articles, 15 authors responded of which 11 were willing and able to provide data).

The first author coded all included articles for the following characteristics: (1) outcome (type, measure, timing of assessment), (2) alliance (rater perspective, measure, timing of assessment), and (3) intervention and provider type, (4) demographic information (age, gender, race). The second author cross-checked all coded characteristics. The first author extracted numerical data from alliance-outcome analyses within included articles or from data provided from study authors. The second author independently extracted these numerical data from 20% of included analyses and agreement was calculated to determine if all data should be extracted by both authors (cutoff: <90% agreement).

2.4. Quality assessment

All included studies were assessed for study quality and risk of bias using the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies developed by the National Institute of Health's National Heart, Lung, and Blood Institute.(National Institute of Health: U.S. Department of Health and Human Services, 2015) The first two authors independently rated all studies for quality and discussed discrepancies until consensus was reached (including the last author when necessary).

2.5. Data analysis

The software program Comprehensive Meta-Analysis v.2 (Borenstein et al., 2005) was used to calculate mean correlation values and to carry out subsequent homogeneity and moderator variable analyses. The unit of analysis in our meta-analysis was the correlation coefficient (r) as an index of variance explained by the rating of therapeutic alliance and subsequent outcome. Positive values indicated that as alliance ratings became stronger, scores on changes in the associated

treatment outcome were higher in value. Correlations were evaluated between the alliance and treatment engagement outcomes and partial correlations were evaluated between the alliance and all other outcomes (functioning, total symptoms, medication adherence, positive symptoms, negative symptoms, total symptoms, depressive symptoms) to control for baseline levels of the outcome of interest. Further, effects were examined separately for analyses of client-rated alliance and other-rated alliance (including provider-rated and observer-rated alliance). In cases where the magnitude of non-significant relationships was not reported (and not provided by study authors), we coded the correlation/partial correlation as zero. Mean correlations were only calculated for outcome classes that had at least three studies. Correlations were categorized as small (r = 0.1), medium (r = 0.3), or large (r = 0.5) (Cohen, 1988).

Individual values of r were thereafter transformed into Fisher's Z-units for analysis, and then combined across studies and weighted according to their precision using a random-effects model. Potential differences in Fisher z-units between studies were analyzed using an established method (Borenstein et al., 2009; Hedges and Olkin, 1985). This procedure computes mean weighted Fisher Z-values and 95% confidence intervals (CIs) for each variable subset and allows for the testing of the influence of each individual factor on the overall results using the Q statistic. To assess stability of underlying effects, we used a test for heterogeneity Q_T, which is based on the sum of squares of the individual Fisher Z-values around the mean when each square is weighted by the inverse of the estimated variance of the Z-values. Q has an asymptotic $\chi 2$ distribution and is analogous to the ANOVA. Studies were evaluated for within-group differences (Q_W) and between-group differences (Q_B) following the same model. This approach was complemented by the use of the I^2 statistic that reflects the proportion of variability in Fisher z-values that is attributable to different studies (20% low, 50% moderate, and 75% high heterogeneity) (Higgins et al., 2003). All individual and summary Fisher Z-values were transformed back into correlation coefficients and these were reported for ease of communication. A two-tailed significance level of $p < .05$ was selected for all analyses.

To partially address the "file-drawer" problem in which studies with negative results are less likely to be submitted or published through the peer-review process, we calculated a fail-safe N using the Orwin (1983) method which provides an estimate of the number of studies with null results that would be needed to render the obtained effect size not clinically meaningful (Orwin, 1983). In the absence of a universally accepted clinical significance level for effect sizes, we assumed a correlation of 0.05 would cease to reflect a meaningful degree of association between alliance and outcome.

Meta-regression moderator analyses were evaluated for moderator and outcomes that were present in at least five studies. They included age, gender (% female), and race/ethnicity (% racial/ethnic minority). We also evaluated treatment type (psychological therapy vs. other) and timing of alliance rating (early [within first 5 sessions or up to first month] vs. late [after session 5 or beyond one month]) in dichotomous comparisons.

3. Results

3.1. Search results

The parallel database searches yielded 1761 records after duplicates were removed. Title and abstract screening excluded 1534 records, resulting in 227 articles to be assessed at the full-text level. Upon review, 15 articles met the inclusion criteria; however, one additional study was excluded from analysis as it was the sole study examining an outcome of interest (medication adherence), thereby not meeting the threshold of three studies for analysis. As such, 14 studies covering six outcome domains (treatment engagement, functioning, total symptoms, positive symptoms, negative symptoms, depressive symptoms) were included in analyses (Andrews et al., 2016; Berry et al., 2016, 2015; Browne et al., 2019a; Catty et al., 2010; Cella and Wykes, 2019; Frank and Gunderson, 1990; Goldsmith et al., 2015; Hansson et al., 2008; Hargreaves et al., 2018; Huddy et al., 2012; Jung et al., 2014; Mohamed et al., 2010; Mulligan et al., 2014). High levels of agreement were observed between the two reviewers on data extraction (92% agreement; kappa = 0.95). Therefore, the original author's data extraction ratings were used (Fig. 1).

3.2. Study quality

Based on the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies developed by the National Institute of Health's National Heart, Lung, and Blood Institute (National Institute of Health: U.S. Department of Health and Human Services, 2015), all the studies were rated as high quality and low risk for bias (see Supplementary material for ratings of all included studies). The only notable variability between studies arose on two items: (a) alliance was assessed multiple times (yes: k = 6, no: k = 7, cannot determine: k = 1), and (b) ≤20% loss to follow-up (yes: k = 6, no: k = 5, cannot determine/not reported: k = 3). There were minimal differences on other items. Given the low variability across studies, study quality was not evaluated as a moderator in analyses.

3.3. Study characteristics

The 14 included studies evaluated the relationship between the alliance and outcome across a range of psychosocial interventions with the majority involving psychological therapy (k = 7) or cognitive remediation (k = 3) with the remainder comprising case management (k = 1), vocational rehabilitation (k = 1), healthy lifestyle intervention for smoking cessation (k = 1), and an intervention to improve client-provider communication (k = 1). The majority of studies included alliance ratings from both client and provider perspectives (k = 8) with fewer including alliance ratings from only the client (k = 4) or other (provider: k = 1; observer: k = 1) perspective. In alliance measures, therapists were most often rated (k = 11) followed by case managers (k = 2) and vocational specialists (k = 1) (Table 1). The largest number of studies examined the relationship between alliance and treatment engagement (k = 8) and/or functioning (k = 8) with fewer examining the relationship between alliance and symptoms (total: k = 5, positive: k = 4, negative: k = 4, depressive: k = 4; Table 2).

3.4. Client-rated alliance and treatment outcomes

As can be seen in Table 3 and Fig. 2, mean client-rated alliance was significantly correlated with treatment engagement (r = 0.20, 95% CI: 0.007/0.373, k = 6). However, improvements in functioning, positive and negative symptoms, overall symptoms and depressive symptoms were not related to client ratings of therapeutic alliance (all ps > .12). Heterogeneity measures suggested that the overall weighted mean correlation between client-rated alliance and treatment engagement was not stable. Age and gender were not found to influence the observed relationships (ps > .8) and race/ethnicity was not evaluated as it was not reported in at least five studies. Whether the alliance was assessed in psychological therapy or in a different type of individual intervention did not influence the relationship of client-rated alliance and treatment engagement (p = .669) either. Timing of alliance was not evaluated as a moderator given that all six studies evaluated the alliance early in the course of treatment (within sessions 1–5 or up to one month).

3.5. Other-rated alliance and treatment outcomes

As can be seen in Table 3 and Fig. 3, mean other-rated alliance was also significantly correlated with treatment engagement (r = 0.25, CI: 0.11/0.38, k = 7). Both improvements in positive symptoms and negative symptoms were significantly linked to other-rated therapeutic alliance (r = −0.14, CI: −0.24/−0.03, k = 3; Fig. 4; r = −0.22, CI: −0.32/

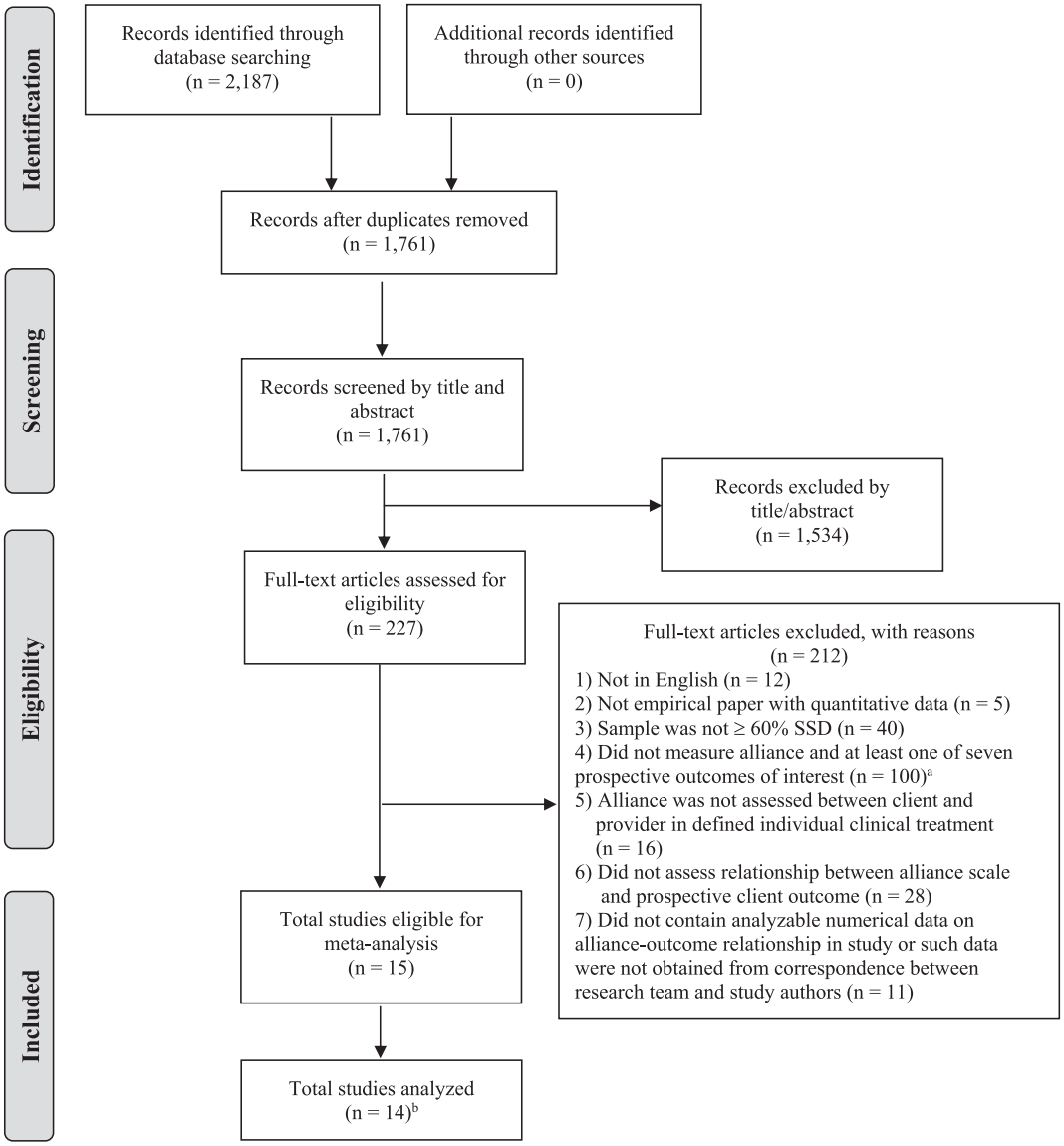

Fig. 1. PRISMA flow diagram. Note. SSD = schizophrenia spectrum disorder. When full-text articles did not meet more than one inclusion criteria, only the first reason (based on the inclusion criteria order listed above) was noted in the figure. [a]Outcomes of interest were general functioning/quality of life, treatment engagement, medication adherence, total symptoms, positive symptoms, negative symptoms, and depressive symptoms. [b]One article was excluded from analysis because it was the only one with available data examining the medication adherence domain. As such, medication adherence was dropped as an analysis domain.

−0.12, k = 3; Fig. 5, respectively). Improvements in functioning, overall symptoms and depressive symptoms were not related to other-rated therapeutic alliance (all ps > .06).

Heterogeneity measures suggested that the overall weighted mean relationship between other-rated alliance and treatment engagement was not stable. Moderator analyses revealed that the percentage of the sample identifying as being from a racial/ethnic minority background was negatively correlated with the link between other-rated alliance and treatment engagement (slope: −0.01724, SE: 0.00393, Z = −4.39, p < .001, k = 6); the relationship between alliance and treatment engagement was attenuated in samples with a higher percentage of participants from a racial/ethnic minority background. Differences in the mean age and gender of the samples did not influence the relationship between alliance and engagement. The other-rated alliance-engagement association was stronger for psychological therapy interventions than other interventions (psychological therapy, r = 0.380 vs. all other interventions, r = 0.102; Q_b = 4.603, df = 1, p = .032). Timing of the alliance rating was not a significant moderator of the alliance-engagement relationship.

3.6. "File-drawer" analysis

We sought to determine the extent to which our studies would be influenced by unpublished results, "the file-drawer problem" of non-significant effects. As shown in Table 3, for client-rated alliance there would need to be 17 unpublished studies with null effects for client-rated alliance to be unrelated to treatment engagement. For other-rated alliance, there would need to be 28 unpublished negative studies for other-rated alliance to be unrelated to treatment engagement, 5 unpublished negative findings for alliance to be unrelated to positive symptom improvement after treatment, and 11 unpublished negative findings for other-rated alliance to be unrelated to negative symptom improvement after treatment.

4. Discussion

The present study, consisting of 14 studies, 6 indices of outcomes, 6 types of treatment, and 2968 participants, is the most comprehensive

Table 1
Summary of characteristics of included studies (k = 14).

Reference	Sample characteristics	Intervention and provider type	Alliance measure(s), rater perspective(s), and timing of assessment	Outcome domain(s) - Measure(s), and timing of assessment
Andrews et al. (2016)	178 participants (78% S), 40.77 years old, 40% female, race NR	Healthy lifestyle intervention for smoking Therapist	Agnew Relationship Measure Client-rated and Other-rated (Provider) Assessed at session 1	Functioning – GAF Treatment Engagement – Total Sessions Attended Total Symptoms - BPRS Depressive Symptoms - BDI Assessed at 12 months
Berry et al. (2015)	164 participants (100% S), 37.40 years old, 11% female, 18% racial minority	Psychological therapy Therapist	WAI Client-rated and Other-rated (Provider) Assessed after session 3	Functioning - GAF Total Symptoms - PANSS Assessed at 24 months
Berry et al. (2016)	52 participants (100% EP), 23.76 years old, 10% female, 6% racial minority	Psychological therapy Therapist	WAI Client-rated and Other-rated (Provider) Assessed at one month	Functioning – GAF Treatment Engagement – Total Sessions Attended Total Symptoms - PANSS Assessed at 18 months
Browne et al. (2019)	144 participants (100% EP), 23.82 years old, 24% female, 40% racial minority	Psychological therapy Therapist	VTAS Other-rated (Observer) Assessed at session 3, 4, or 5	Functioning – QLS Treatment Engagement – Total Sessions Attended Total, Positive, Negative Symptoms – PANSS Depressive Symptoms – CDSS Assessed at 24 months
Catty et al. (2010)	312 participants (80% S), 37.80 years old, 40% female, race NR	Vocational intervention Vocational worker	HAS Client-rated and Other-rated (Provider) Assessed at 6 months	Functioning – GAF Positive and Negative Symptoms – PANSS Depressive Symptoms – HADS Assessed at 18 months
Cella & Wykes (2019)	46 participants (100% S), 38.70 years old, 30% female, race NR	Cognitive remediation Therapist	WAI Client-rated Assessed after session 4	Functioning – Time Use Survey Positive and Negative Symptoms – PANSS Assessed at 12 weeks
Frank & Gunderson (1990)	164 participants (100% S), 22.00 years old, 32% female, 24% racial minority	Psychological therapy Therapist	PSR[a] Other-rated (Provider) Assessed at 6 months	Treatment Engagement – Length of Stay in Therapy Assessed at 24 months
Goldsmith et al. (2015)	309 participants (100% EP), 27.40 years old, 30% female, 15% racial minority	Psychological therapy Therapist	CALPAS Client-rated Assessed at session 4	Total Symptoms – PANSS Assessed at 18 months
Hansson et al. (2008)	507 participants (100% S), 42.15 years old, 34% female, race NR	Mixed: Standard care or DIALOG intervention Case manager	HAS Client-rated Assessed at baseline	Functioning - MANSA Assessed at 12 months
Hargreaves et al. (2018)	48 participants (71% S), 43.50 years old, 35% female, race NR	Cognitive remediation Therapist	WAI Client-rated Assessed at baseline	Treatment Engagement – Minutes of Intervention Completed Assessed at 8 weeks
Huddy et al. (2012)	49 participants (100% S), 40.30 years old, 26% female, 47% racial minority	Cognitive remediation Therapist	WAI Client-rated and Other-rated (Provider) Assessed at baseline	Treatment Engagement – Weeks in Treatment Assessed at 12 weeks
Jung et al. (2014)	56 participants (100% S), 33.40 years old, 45% female, race NR	Psychological therapy Therapist	STEP Client-rated and Other-rated (Provider) Combined ratings from sessions 1–5	Functioning – GAF Positive and Negative Symptoms - PANSS Depressive Symptoms - CDSS Assessed post-treatment (length NR)
Mohamed et al. (2010)	1402 participants (72% S), 50.50 years old, 9% female, 34% racial minority	Case management Case manager	WAI Client-rated and Other-rated (Provider) Assessed at baseline (client-rated) Assessed at 6 months (other-rated)	Treatment Engagement – Termination (yes/no)[a] Assessed over three-year period
Mulligan et al. (2014)	22 participants (100% S), 36.70 years old, 32% female, 23% racial minority	Psychological therapy Therapist	WAI Client-rated and Other-rated (Provider) Assessed after session 3	Treatment Engagement – Number of Missed Sessions[a] Assessed at 9 months

Note. S = schizophrenia spectrum disorders; NR = not reported; GAF = Global Assessment of Functioning; BPRS = Brief Psychiatric Rating Scale; BDI = Beck Depression Inventory; PANSS = Positive and Negative Syndrome Scale; VTAS = Vanderbilt Therapeutic Alliance Scale; FEP = first-episode psychosis or early psychosis; WAI = Working Alliance Inventory; QLS = Quality of Life Scale; CDSS = Calgary Depression Scale for Schizophrenia; HAS = Helping Alliance Scale; HADS = Hospital Anxiety and Depression Scale; PSR = Psychotherapy Status Report; EP = early psychosis; CALPAS = California Psychotherapeutic Alliance Scales; MANSA = Manchester Short Assessment of Quality of Life; STEP = Short Inventory for Individual Psychotherapy and Counseling. Demographic information reported above reflect characteristics for the entire study sample and thus, may differ from characteristics of the sample included in alliance analyses (i.e., it was not adjusted for missing data or if alliance analyses were only conducted on a subset of participants). Further, sample sizes above correspond to the full sample for whom demographic information were available and as such, may differ from sample sizes used in alliance analyses. For papers that did not report demographic information but cited a parent study, sample size and demographic information from the parent study was reported above.

[a] Alliance-outcome correlations/partial correlations were multiplied by −1 in analyses so that positive values represented relationships between high alliance and improved outcomes.

Table 2
Summary of significant and non-significant alliance-outcome relationships in included studies (k = 14).

Reference	Functioning	Treatment engagement	Total symptoms	Positive symptoms	Negative symptoms	Depressive symptoms
Andrews et al. (2016)	C (ns) O (ns)	C (ns) O (ns)	C* O (ns)	–	–	C (ns) O (ns)
Berry et al. (2015)	C (ns) O (ns)	–	C (ns) O (ns)	–	–	–
Berry et al. (2016)	C* O (ns)	C (ns) O*	C* O (ns)	–	–	–
Browne et al. (2019a)	O*	O (ns)	O*	O (ns)	O*	O (ns)
Catty et al. (2010)	C (ns) O*	–	–	C (ns) O*	C (ns) O*	C (ns) O (ns)
Cella & Wykes (2019)	C (ns)	–	–	C (ns)	C (ns)	–
Frank & Gunderson (1990)	–	O*	–	–	–	–
Goldsmith et al. (2015)	–	–	C*	–	–	–
Hansson et al. (2008)	C (ns)	–	–	–	–	–
Hargreaves et al. (2018)	–	C*	–	–	–	–
Huddy et al. (2012)	–	C (ns) O (ns)	–	–	–	–
Jung et al. (2014)	C (ns) O (ns)	–	–	C (ns) O (ns)	C (ns) O (ns)	C (ns) O (ns)
Mohamed et al. (2010)	–	C (ns) O*	–	–	–	–
Mulligan et al. (2014)	–	C (ns) O*	–	–	–	–

Note. C = client-rated alliance; O = other-rated alliance (provider-rated or observer-rated); * = significant ($p < .05$); ns = not significant ($p > .05$). Correlations were examined for relationship between alliance and treatment engagement. Partial correlations were calculated for all other outcomes as relationship between alliance and outcome controlling for baseline level of outcome.

meta-analysis to date on the alliance-outcome relationship in SSD and early psychosis treatment. Results demonstrated that better client-rated and other-rated alliance was associated with better treatment engagement. In addition, better other-rated but not client-rated alliance was related to greater improvement in positive and negative symptoms. Neither client-rated nor other-rated alliance was linked to improvements in total symptoms, depressive symptoms, or functioning. Taken together, these findings highlight the importance of the alliance in facilitating better treatment engagement and improved positive and negative symptoms among individuals with SSDs and early psychosis.

The relationship observed between alliance and engagement is consistent with literature in the general population (Sharf et al., 2010) and the only other published meta-analysis on this topic in SSDs (Bourke et al., 2021). These findings are especially valuable given the difficulties retaining individuals with SSDs and early psychosis in treatment (Dixon et al., 2016; Kreyenbuhl et al., 2009). The fact that both client-rated and other-rated alliance were associated with engagement may highlight the importance of achieving agreement on goals and tasks in treatment as these are two critical components of the alliance. For example, providers may establish an agenda at the start of the session that elicits objectives from the client (i.e., goals) and then discuss how the therapy content and skills (i.e., tasks) align with such objectives. This type of structure allows for open dialogue about clients' needs and intervention rationale to illustrate how treatment can be helpful. As such, building a strong therapeutic alliance early in treatment that is recognized by both the client and provider is important for promoting engagement in psychosocial interventions for this population.

Treatment type had a significant moderating effect on the relationship between other-rated alliance and engagement. Specifically, the alliance-engagement relationship was stronger in psychological therapy compared to all other interventions combined (cognitive remediation, case management, healthy lifestyle intervention for smoking cessation). Establishing agreement on goals and tasks in psychological therapy may be more challenging and more critical to facilitating better engagement as compared to the other psychosocial interventions included in this meta-analysis. As opposed to other psychosocial interventions that tend to have clear behavioral targets (e.g., improving cognition in cognitive remediation or reducing cigarette use in healthy lifestyle intervention for smoking), psychological therapy can be aimed at numerous aspects of mental health and functioning, thereby making identification of well-defined treatment goals difficult. Further, whereas some psychosocial interventions provide clients with concrete

Table 3
Estimated mean correlations for the alliance-outcome relationship.

Outcome	k	N	r	95% CI	z	P	Qw	df	p	I^2	N_{fs}
Client-rated therapeutic alliance											
Engagement	6	1509	0.20	0.007/0.373	2.029	0.042	26.152	5	.000	80.881	17
Positive symptoms	3	291	0.02	−0.094/0.138	0.369	0.712	1.364	2	.506	0.000	NA
Negative symptoms	3	291	−0.09	−0.202/0.028	−1.49	0.137	1.637	2	.441	0.000	NA
Total symptoms	4	304	−0.18	−0.400/0.069	−1.413	0.158	12.549	3	.006	76.094	NA
Depressive symptoms	3	356	−0.02	−0.187/0.152	−0.206	0.887	4.548	2	.103	56.022	NA
Functioning	7	744	0.06	−0.026/0.136	1.34	0.180	7.631	6	.266	21.373	NA
Other-rated Therapeutic Alliance											
Engagement	7	1999	0.25	0.113/0.378	3.52	0.000	28.62	6	.000	79.036	28
Positive symptoms	3	233	−0.14	−0.24/−0.03	−2.50	0.012	0.704	2	.703	0.000	5
Negative symptoms	3	233	−0.22	−0.32/−0.12	−4.09	0.000	1.464	2	.481	0.000	11
Total symptoms	4	303	−0.14	−0.333/0.072	−1.286	0.199	9.002	3	.029	66.673	NA
Depressive symptoms	4	431	−0.06	−0.157/0.033	−1.275	0.202	1.911	3	.591	0.000	NA
Functioning	6	532	0.18	−0.012/0.353	1.831	0.067	21.771	5	.001	77.033	NA

Note. k = number of studies; *N* = number of clients; 95% CI: 95% confidence interval; Z = significance test within the group; Q_w = homogeneity statistic; I^2 = index of heterogeneity among studies; N_{fs} = the number of null findings that would need to be found to reduce the mean effect-size to d = 0.10.

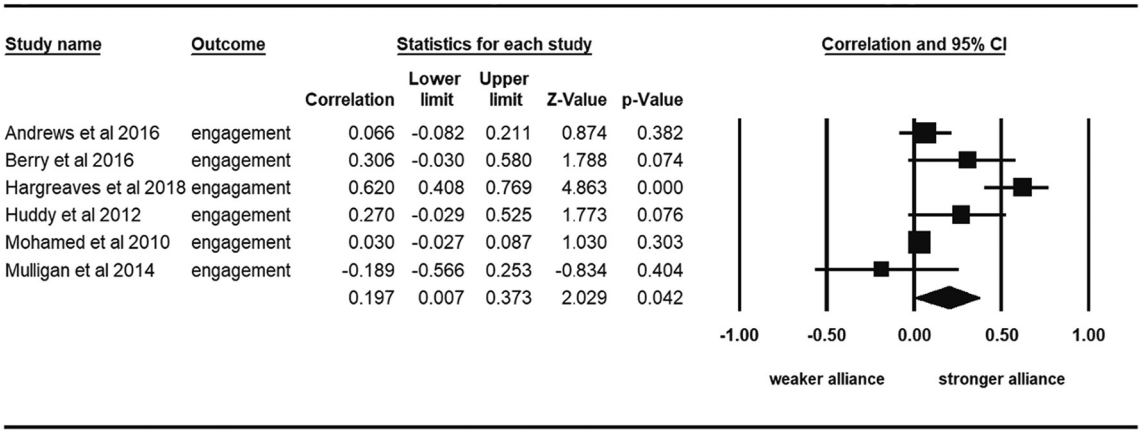

Fig. 2. Statistics and forest plot for relationship between client-rated alliance and engagement. The figure includes individual statistics and a forest plot for studies that assessed the relationship between client-rated alliance and engagement. Summary statistics are reflected by the values in the bottom line in the "statistics for each study" section of the figure.

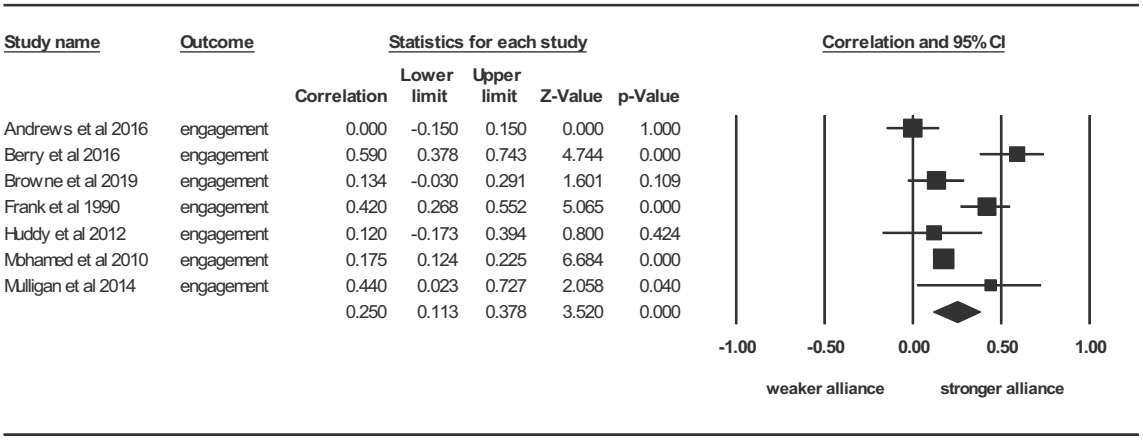

Fig. 3. Statistics and forest plot for relationship between other-rated alliance and engagement. The figure includes individual statistics and a forest plot for studies that assessed the relationship between other-rated alliance and engagement. Summary statistics are reflected by the values in the bottom line in the "statistics for each study" section of the figure.

tools (e.g., computer cognitive practice in cognitive remediation or resource connection in case management), psychotherapy often focuses more on discussion and teaching. As such, explicit discussion of goals early on in psychological treatment may be especially important for developing a strong alliance and maintaining engagement. In fact, research has illustrated that focusing on recovery goals in psychological treatment leads to improved motivation in individuals with early psychosis, further highlighting the importance of this aspect of building an alliance (Fulford et al., 2020).

In addition to treatment type, sample proportion of race/ethnicity minority background moderated the association between other-rated alliance and engagement. The alliance-engagement relationship was lower in samples with a greater number of clients from racial/ethnic minority backgrounds. This finding may indicate that engagement is

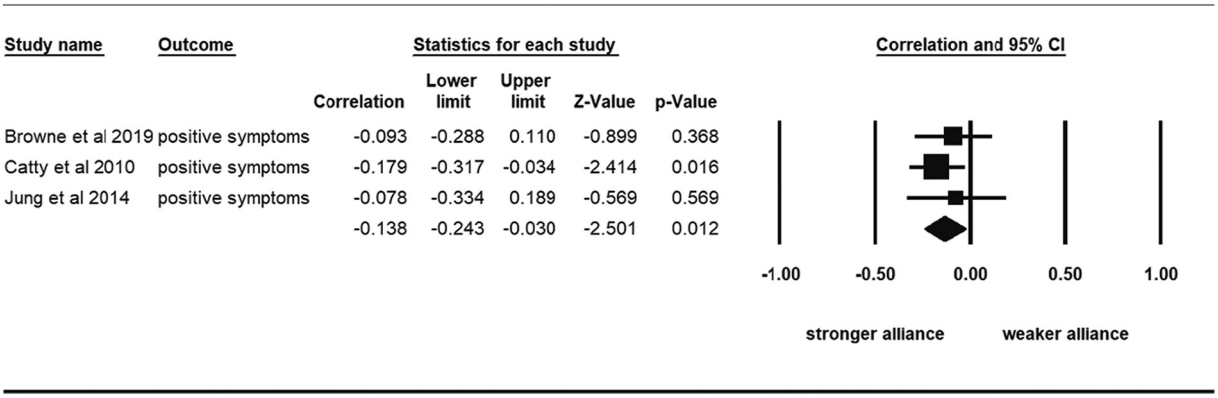

Fig. 4. Statistics and forest plot for relationship between other-rated alliance and improvements in positive symptoms. The figure includes individual statistics and a forest plot for studies that assessed the relationship between other-rated alliance and improvements in positive symptoms. Summary statistics are reflected by the values in the bottom line in the "statistics for each study" section of the figure.

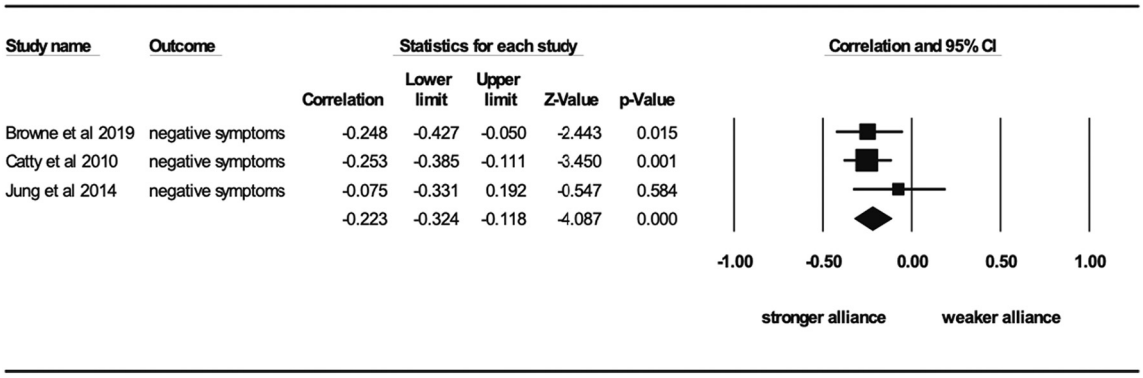

Fig. 5. Statistics and forest plot for relationship between other-rated alliance and improvements in negative symptoms. The figure includes individual statistics and a forest plot for studies that assessed the relationship between other-rated alliance and improvements in negative symptoms. Summary statistics are reflected by the values in the bottom line in the "statistics for each study" section of the figure.

influenced by factors other than the therapeutic alliance for clients of racial/ethnic minority backgrounds. Racial/ethnic disparities in treatment engagement persist due to a number of structural, cultural, and individual factors such as socioeconomic status, stigma, discrimination, lack of confidence in mental health services, and low familial involvement (Maura and Weisman de Mamani, 2017). As such, developing a strong therapeutic alliance may not be sufficient to facilitate engagement in treatment for clients of racial/ethnic minority backgrounds in light of these pervasive barriers. Instead, there is a need for larger, programmatic, system-level changes to ameliorate the disparity and provide the necessary structure to better engage clients of racial/ethnic minority backgrounds in treatment.

Better other-rated but not client-rated alliance was associated with improvements in positive and negative symptoms. These findings are in contrast to the general psychotherapy literature (Horvath et al., 2011) and the Bourke et al. (2021) meta-analysis where both alliance perspectives were associated with symptom improvements; however, the dissimilar results may be a product of a different composition of studies analyzed, our inclusion of non-psychotherapy studies, and focus on individual treatments only. Yet, given that clients tend to rate the alliance more positively than providers and perspectives are not always correlated in samples of those with SSDs (Shattock et al., 2018), our results may indicate that clients and providers/observers focus on different aspects of the alliance, which in turn affect outcomes differently (Browne et al., 2019b). Another possible explanation may be that when therapists perceive the alliance to be stronger, they more effectively deliver the intervention in a way that leads to improvements in positive and negative symptoms. Our results illustrate the value of therapists/observers assessing the alliance from their perspective as it may serve as an important early indicator for future treatment-related changes in positive and negative symptoms.

There are a number of possible explanations for how the alliance results in improved outcomes; however, two viewpoints are commonly discussed in the literature (Zilcha-Mano, 2017). On the one hand, it may be that developing a strong alliance provides value to clients in its own right. In this way, the alliance may provide them with a corrective experience for prior maladaptive relationships. Indeed, the intersubjective therapeutic space in which the alliance emerges in individual treatments may in some cases even go further and serve to deepen clients' understanding of themselves and others in a manner that helps clients take ownership of their own treatment and recovery, regardless of specific psychosocial treatment modality (Lysaker et al., 2018). On the other hand, a strong alliance may serve as a necessary foundation for the specific components of the intervention to be effective. Although the specific mechanism through which the alliance relates to improved outcomes remains undetermined, the results of this meta-analysis provide further evidence for the relationship between a strong alliance and improved engagement and symptoms for persons with SSDs and early psychosis.

This meta-analysis is not without its limitations and thus, warrants caution when.

interpreting the results. First, the overall number of included studies was modest ($k = 14$) and resulted in relatively few studies per outcome (range: 3–7). Relatedly, we could not evaluate moderators in all analyses due to the low number of studies and unreported data. Second, while our analyses focused on studies that typically assessed alliance early in treatment, and related that alliance directly to change in outcomes across time, we cannot rule-out the possibility that in some circumstances symptoms at study entry may have influenced alliance ratings such that clients with less symptoms at baseline received higher alliance ratings, and that in turn these less symptomatic clients were more likely to improve during treatment. Third, we combined therapist-rated and observer-rated alliance ratings into the other-rated alliance category, which may have introduced additional variability in alliance ratings (although just one study used observer ratings). However, therapist and observer ratings have been shown to be correlated in prior work on the alliance in treatment for SSDs (Startup et al., 2006) and our significant findings were not altered when removing the single observer study from analyses. Fourth, moderator analyses of demographic characteristics (age, gender, race/ethnicity) were conducted using means and proportions from the full sample, which in some cases, may not have fully reflected the sample used in analyses (since some studies evaluated alliance-outcome relationship in a subset of participants). Fifth, our engagement outcome comprised several indicators (number of sessions attended, number of missed sessions, termination, and length/duration of treatment), each of which may have distinct relationships with the alliance and further emphasizes a need for future work in establishing valid and reliable measures of engagement (Tetley et al., 2011). Sixth, due to differences in reporting of demographics across studies, we examined the percentage of participants from a racial/ethnic minority background as a moderator, which may not capture important differences across specific racial and ethnic backgrounds. Finally, the magnitude of our significant findings was small (rs range: 0.14–0.25) but consistent in size with the results of existing psychotherapy meta-analyses based on hundreds of studies with diverse samples (Horvath et al., 2011: $r = 0.275$, Flückiger et al., 2018: $r = 0.278$).

Despite these limitations, the present study adds to the small but growing literature on the alliance-outcome relationship in individual treatment for SSDs and early psychosis. This meta-analysis also had a number of strengths. First, it examined the alliance-outcome relationship across multiple types of individual psychosocial interventions, thereby capturing the multifaceted nature of treatment for this population. Second, it assessed the impact of alliance on a variety of important

outcome domains that are critical to recovery in SSDs and early psychosis. Third, moderator analyses were conducted to examine the impact of sample client and treatment characteristics, which may help inform clinical practice. As the most comprehensive meta-analysis on this topic to date, our results highlight that the therapeutic alliance is important for engaging clients with SSDs in treatment and in facilitating improvements in positive and negative symptoms. Future research should examine the relationship between the alliance and subjective recovery-based measures (e.g., psychological well-being, loneliness, subjective satisfaction with life) given that these outcomes are critical to recovery in those with SSDs and early psychosis and may be distinct from objective indicators of recovery (e.g., symptoms, functioning) (Roe et al., 2011).

Based on the results of this meta-analysis, training and supervision of clinical providers working with individuals with SSDs and early psychosis across intervention types should underscore the importance of developing a high-quality alliance early in treatment. Further, given that prior research has found that higher severity of symptoms (particularly negative symptoms) and lower insight, medication adherence, and social support are associated with a lower-quality therapeutic alliance, identification of strategies to establish a strong alliance with clients who have these characteristics would be especially valuable (Browne et al., 2019b; Shattock et al., 2018). Overall, the quality of the therapeutic alliance is important in the psychosocial treatment of persons with SSDs and early psychosis and thus, should be a focus of clinical care delivery.

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CRediT authorship contribution statement

All authors were involved in the design of the study. JB conducted the initial search and JB and AW completed screening, coding, data extraction, and study quality rating. MK conducted all statistical analyses. JB, AW, and MK wrote the first draft. KB, KM, CC, and DP provided edits and revisions to the manuscript. All authors are in agreement with the final version.

Declaration of competing interest

The authors declare no conflicts of interest pertinent to this study.

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