MMPI-2-RF Empirical Correlates of Alliance and Treatment Engagement

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Abstract

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MMPI-2-RF Empirical Correlates of Alliance and Treatment Engagment

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The MMPI-2-RF is one of the most comprehensive and widely-used personality measures in clinical settings. Clients' personality characteristics are important to consider when predicting treatment engagement. Although the MMPI-2-RF interpretation manual suggests certain scale elevations are related to treatment engagement, these suggestions are mostly inferential. The focus on issues relevant to treatment engagement has generally been neglected in past studies examining empirical correlates of MMPI scale elevations. Client personality characteristics are related to alliance with the clinician, and prior studies have identified a link between alliance and treatment engagement. However, there have not yet been studies examining MMPI scale correlates of therapeutic alliance. The present study examined the relationship of MMPI-2-RF scales to treatment engagement and alliance in 164 individuals seeing outpatient treatment at a psychology department clinic. Results suggested MMPI-2-RF validity scales were generally not related to engagement or alliance. As predicted, high scores on MMPI-2-RF scales indicative of behavior dysfunction, low positive emotions and cynicism were related to higher rates of premature termination, and high scores on cynicism were also related to lower likelihood of presentation to first session. High scores on emotion dysfunction and interpersonal ineffectiveness were related to lower average alliance, while high scores on low positive emotion, cognitive dysfunction and behavior restricting fears were related to lower early alliance. Limitations include lack of diversity in participant demographics,

use of different treatment modalities and different therapists among participants, and measurement of treatment engagement. Findings add to the previous literature exploring the relationship between client personality traits and therapy engagement and therapy alliance.

Dedication

To Pitashri, Matashri, Mota Bhai, Bhabhi, and Omkar. Thank you for your unwavering support, love, and encouragement.

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MMPI-2-RF

The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF) is one of the most comprehensive and widely used self-report personality inventories in clinical practice (Ben-Porath, 2012). It was initially developed to differentially diagnose commonly occurring mental disorders (Hathaway, 1960), but over decades underwent various transformations from an instrument designed to determine specific diagnoses to one in which interpretations are based on empirically-derived correlates for various psychopathological and personality presentations. Having the basis for interpretation be empirical correlates, which have been collected from large databases across a wide range of clinical and nonclinical settings, sets the MMPI apart from many other personality inventories. While many of the empirical correlates of the MMPI-2-RF scales are helpful in diagnosis, some also identify interpersonal characteristics and behaviors that may be relevant in treatment planning, including treatment engagement and alliance.

Despite the many recent advances in psychotherapy research and delivery, the problem of treatment engagement remains, limiting the ultimate effectiveness of these interventions. For example, roughly 20% of clients terminate mental health treatment prior to obtaining the full "dose" of therapy (Swift & Greenberg, 2012). Relatedly, "no-show" rates or clients who regularly cancel or attend sessions irregularly are also another deterrent to providing optimal mental health care. Both premature termination and "no-show" appointments negatively affect the client and the agency.

Although there are few studies on MMPI correlates of treatment engagement, past medical and psychological literature indicates that some personality characteristics are

related to treatment engagement. For example, higher rates of conscientiousness and neuroticism are related to greater rates of treatment engagement, while higher rates of narcissism, aggressiveness, impulsiveness and lower rates of agreeableness are related to lower rates of treatment engagement (Boswell et al., 2013; Sasso & Strunk, 2013; Umaki, Umaki, & Cobb, 2012). A limitation in the existing literature is the use of narrow dimensions of personality or only the five-factor model, which are not as readily used in clinical practice as other measures. In addition, lack of assessment for validity of self-report is a major limitation of existing research on personality correlates of treatment engagement. An important future direction in the literature is exploring client characteristics using a more comprehensive and clinically relevant measure of personality that not only is well normed, but that is also useful in diagnostic terms and that has well developed and validated validity scales, such as the MMPI-2-RF.

Few empirical data have been published regarding MMPI predictors of therapy session no-shows and premature treatment termination. Arbisi, Rusch, Pousny, Thuras, and Erbes (2013) examined the role of cynicism in veterans using a subset of items from the MMPI-2 RC3 (Cynicism) scale. This study used only valid MMPI reports in the analyses. Results indicated that predeployment cynicism was a barrier to seeking mental health treatment postdeployment for veterans diagnosed with a mental illness (Arbisi et al., 2013).

Another study (Sellbom et al., 2008) used an older version of the MMPI (MMPI-2) but calculated the newer 2-RF Restructured Clinical scales and also included the PSY 5 scales (which were released prior to publication of the MMPI-2-RF). Sellbom and colleagues (2008) examined premature treatment termination using the RC Scales for the

MMPI-2 in individuals participating in a domestic violence intervention program. Only valid MMPI reports were used in the analyses. Elevated scores on Antisocial Behavior and Hypomanic Activation were related to premature treatment termination. In an inpatient setting, Scholte and colleagues (2012) investigated the predictive validity of MMPI-2 Clinical, PSY-5, and RC Scales for therapy disruptive behavior (e.g. suicidal threats, walking out of session, drug abuse and anger outbursts in session). Only valid MMPI reports were used in the analyses. Both the RC and PSY-5 Scales predicted several categories of therapy disruptive behavior and both predicted more categories of therapy disruptive behavior than the original Clinical Scales. Further, anger outbursts were predicted especially well by a combination of two of the RC Scales: Antisocial Behavior and Dysfunctional Negative Emotions.

Only two published studies to date have examined treatment engagement with the MMPI-2-RF; both used only valid MMPI reports in the analyses. Mattson et al. (2012) reported that scales related to externalizing behavior, including Antisocial Behavior, Juvenile Conduct Problems, Aggression, Disconstraint-Revised, and Aberrant Experiences, were related to noncompletion of court-mandated substance abuse treatment. In multivariate analyses, when accounting for the other externalizing scales, Juvenile Conduct Problems was the only significant predictor of noncompletion. Anestis, Gottfried and Joiner (2015) examined the utility of the MMPI-2-RF scales in the prediction of premature termination and therapy no-shows while controlling for other relevant predictors in a university-based community mental health center. Results indicated that fifteen MMPI-2-RF scales predicted number of no-shows to session, with effect sizes ranging from r = .11 to .18, and 20 MMPI-2-RF scales predicted premature

termination, with effect sizes ranging from r = .09 to .13. Of note, certain scales were significantly related to both no-show and premature termination: Behavioral/Externalizing Dysfunction, Antisocial Behavior, Neurological Complaints, Juvenile Conduct Problems and Family Problems. On a conceptual level, the findings from this study are consistent with previous research and the definitions of externalizing behavior scales found in interpretative manuals.

An important strength of these MMPI studies relative to the literature on general personality reviewed earlier is that they excluded data from participants who had invalid self-report, based on MMPI validity scales. One prior study investigated the utility of MMPI-2-RF validity scales in prediction of premature termination in a sample of treatment-seeking individuals from a university-based psychology clinic (Anestis, Finn, Gottfried, Arbisi and Joiner, 2014). Interpretive guides suggest that clients with high Variable Response Inconsistency and True Response Inconsistency-Revised Scale scores may tend to be uncooperative, clients who underreport symptoms may be underengaged, and clients who overreport symptoms may be strongly motivated for treatment (Butcher, 2006). They found that high scores on the True Response Inconsistency-Revised Scale and the Infrequent Psychopathology Responses Scale were related to increased risk of premature termination. High scores on the Adjustment Validity Scale were related to lowered risk of premature termination. Of note, these findings were based on the type of termination being defined solely by the therapist's perception and it is unknown whether the client shared the same perception regarding withdrawal from therapy.

In sum, a minimal amount of past literature has suggested some MMPI-2-RF empirical correlates of treatment engagement. See Table A.1 in Appendix A for full

review of previous literature. Elevations on the following nine scales have been found to be related to premature treatment termination: Antisocial Behavior, Behavioral/Externalizing Dysfunction, Juvenile Conduct Problems, Aggressiveness-Revised, Disconstraint-Revised, Aberrant Experiences, True Response Inconsistency, Infrequent Psychopathology Responses, and Adjustment Validity. Across studies, high externalizing behavior is most consistently related to low treatment engagement, consistent with the broader literature on personality traits and treatment engagement. Prior MMPI findings also suggest that the validity scales could be useful in predicting treatment engagement. In addition, elevations on three scales have been found to be related to treatment noncompliance: Antisocial Behavior, Hypomanic Activation and Negative Emotionality/ Neuroticism-Revised. These findings are consistent with prior research on neuroticism, which is related to low treatment engagement in the medical literature (Umaki et al., 2012), although two studies from the psychology literature (Lecomte et al., 2008; Sasso & Stunk, 2012) found higher levels of neuroticism are related to better treatment engagement. Further, elevations on Hypomanic Activation and Juvenile Conduct Problems scales have been found to be related to no-show to sessions. Finally, Arbisi and colleagues (2013) found an elevation on Cynicism was related to a reduction in seeking treatment.

While these few studies are suggestive of a relationship between some MMPI scales and treatment engagement, definitive conclusions cannot be drawn from this limited data from select and specialized clinical populations. Further, alliance and other important issues relevant to engagement in therapy have generally been neglected in past literature on MMPI empirical correlates.

Alliance

Another construct that is important in implementing psychological treatment is alliance. Past medical and psychological research has also demonstrated the importance of therapeutic alliance to engagement in treatment (Botella et al., 2008, Kelley et al., 2014; Pompili et al., 2013). Though the concept of alliance finds its roots in psychoanalysis and emphasized the therapist's role, modern definitions of alliance emphasize collaboration between therapist and client. Bordin (1979) proposed a three-part definition of alliance, which departed from psychodynamic premises. He proposed that alliance was achieved from a collaborative stance in therapy and that three processes fostered its development. Theoretically, different therapies emphasize different aspects of alliance. The three alliance components include the bond between the patient and therapist, agreement on the goals, and agreement on the tasks. One of the strongest forces responsible for the sustained growth of interest in alliance is the consistent finding of a moderate but robust relationship between alliance and treatment outcome of a broad spectrum of treatments across a variety of client/problem contexts. The overall effect size of r = .275 accounts for a modest proportion of variance in treatment outcome; however, the magnitude of the correlation is one of the strongest and most robust predictors of treatment success empirical research has been able to document (Horvath et al., 2011; Wampold & Imel, 20015). Though the importance of alliance has been demonstrated in past research, most research studies typically sample alliance in only a limited number of sessions. If alliance varies to a certain degree from session to session, sampling a single session may provide a relatively unreliable assessment of the general status of alliance across the entire treatment and thus may yield results inconsistent with a clinical view of

a therapy that takes into account information across all sessions. For example, Crits-Cristoph and colleagues (2011) found that taking into account alliance across multiple sessions was a better predictor of outcome at termination than was the alliance measured at a single session.

To date, there is no literature looking at the direct relationship of MMPI scales to alliance. However, a small body of literature suggests a relationship of some client personality characteristics to alliance. For example, past studies have suggested that higher alliance is related to including low hostile-dominance interpersonal style (Cookson et al., 2012), secure attachment style (Mallinckrodt & Jeong, 2015), and high agreeableness and low neuroticism (Johansen et al., 2013). However, these studies used narrow dimensions of personality (e.g. exploring only perfectionism). Further, most of this literature is based on alliance from one session, when it has been shown the aggregation of alliance ratings across sessions is a better method (Crits-Christoph et al., 2011). In addition, measurement of client characteristics was often based on tests that are not commonly used in clinical practice, and past literature did not control for the validity of the self-report personality measures. An important future direction is exploring client characteristics using a comprehensive and clinically useful measure of personality to fully explore the relationship between client personality and its impact on alliance.

Although no study thus far has investigated which MMPI scales are related to alliance, study results from Scholte and colleagues (2012) provide information on which scales could be related to difficulty forming an alliance. Scholte and colleagues (2012) found that, among inpatients with personality disorders, those with an elevated Antisocial Behavior scale were more likely to display therapy disruptive behavior (anger outbursts)

in session, while those with scale elevations on Aggressiveness-Revised and Disconstraint-Revised were at an increased risk of parasuicidal behavior, contract violations, anger outbursts and impulsive acts in session.

The MMPI-2-RF interpretive manual infers that certain scale elevations could be associated with constructs related to treatment engagement and alliance. For example, MMPI-2-RF scales assessing various aspects of externalizing traits and behaviors are expected to be related to lack of motivation for treatment, poor compliance and poor rapport, and poor treatment engagement (Tellegen & Ben-Porath, 2008). Internalizing psychopathology and personality traits associated with low positive emotions, anhedonia, malaise, indecisiveness, and avoidance are also conceptualized as hindrances to treatment. Further, elevations on scales related to disordered thought processes or excessive behavioral activation are considered to be related to difficulty engaging in treatment (Tellegen & Ben-Porath, 2008). These interpretive inferences are based on indirect MMPI empirical correlates rather than on direct measurement of treatment engagement and alliance.

The Present Study

The purpose of the present study was to examine the MMPI-2-RF empirical correlates of treatment engagement and alliance in an outpatient, treatment-seeking sample presenting to a university psychology training clinic. I expanded on previous literature by using the most updated MMPI version and not only accounted for invalidity of self-report when examining the clinical and content scales, but also examined the relationship between MMPI-2-RF validity scales and treatment engagement and alliance. Based on prior literature, I made three hypotheses regarding the relationship of MMPI-2-

RF validity scores to treatment engagement and alliance. The first hypothesis (**H1)** was that high scores on True Response Inconsistency and Infrequent Psychopathology Responses would be related to lower treatment engagement. The second hypothesis (**H2)** was that higher scores on Adjustment Validity Scale– would be related to higher treatment engagement. Hypothesis 3 (**H3)** was that high scores on Adjustment Validity Scale and Uncommon Virtues would be related to low alliance with the clinician.

Three additional hypotheses were also informed by the prior literature. The fourth hypothesis (**H4**) was that elevations on scales assessing antisocial characteristics (Juvenile Conduct Problems, Aggressiveness-Revised, Behavioral/Externalizing Dysfunction, Hypomanic Activation, Disconstraint-Revised-, Antisocial Behavior), emotional dysfunction (Emotional/Internalizing Dysfunction, Low Positive Emotions, Inefficacy, Introversion/Low Positive Emotionality-Revised), Aberrant Experiences, Malaise, and Cynicism would be related to less treatment engagement. The fifth hypothesis **(H5**) was that high scores on Negative Emotionality/Neuroticism-Revised would be related to better treatment engagement. Finally, hypothesis 6 (**H6**) was that elevations on scales assessing antisocial characteristics (Aggressiveness-Revised, Disconstraint-Revised, Antisocial Behavior), neuroticism (Dysfunctional Negative Emotions, Cynicism), Disaffiliativeness, and Ideas of Persecution would be related to lower client-rated alliance.

Given the limited literature, exploratory analyses were conducted on all other scales and their relationship with alliance and treatment engagement; however, no a priori hypotheses were made about a directional relationship.

Methods

Participants

Study hypotheses were tested using archival data collected from clients who 1) completed all forms and assessments relevant to the study hypotheses and 2) gave consent for de-identified data to be used for research purposes. The study was IRB-approved to use client de-identified information. Participants were 164 clients in a Midwestern university psychological training clinic, seen between August 2014 and January 2017. Approximately 66% of the participants were female; 89.6% were Caucasian; 4.3% were African American, 4.3% were Asian, and .6% were multi-racial. Average age of participants was 25.08 (standard deviation was 10.61); the age range of the sample was 18 to 76-years-old. Most of the participants were students (77.5%) and 22.5% were members of the local community. The average amount of education achieved by participants was 13.98 years (SD = 1.54 years, (9to 16 years). Regarding overall intellectual functioning, approximately 136 participants were administered the Wechsler Abbreviated Scale of Intelligence – Second Edition (WASI-II) and achieved an average FSIQ-4 score of 93 (5.20).

Measures

Appendix B includes more detailed psychometrics on all study scales, as well as copies of all non-copyrighted measures.

Personality. The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008) is a 338-item true-false self–report personality inventory comprised of 9 validity scales, 3 higher-order scales, 9 restructured clinical scales, and 23 specific problems scales associated with somatic and cognitive

symptoms, internalizing symptoms, externalizing symptoms, and interpersonal symptoms. See Table B.1 in Appendix B for a description of the MMPI-2-RF scales. Two Interest scales and revised and updated versions of the Personality Psychopathology Five (PSY-5) scales are also included in the MMPI-2-RF. One-week test-retest reliabilities are generally high, as are internal consistencies for most scales (Tellegen & Ben-Porath, 2008). Convergent and discriminant validity relative to other scales has been demonstrated, and empirical correlates of scales have been identified for clinical, forensic, medical, and non-clinical samples (Burchett & Ben-Porath, 2010; Forbey, Lee, & Handel, 2010; Gervais, Ben-Porath, Wygant, & Sellbom, 2010; Handel, Ben-Porath, Tellegen, & Archer, 2010; Sellbom & Bagby, 2008; Tellegen and Ben-Porath, 2008). For the purpose of the present study, the validity scales were used in one set of analyses to determine the relationship between invalid reports and treatment engagement and alliance. For all other analyses, participants with invalid MMPI-2-RF profiles were removed.

Alliance. In accordance with the clinical protocol, alliance was client-rated after every therapy session with the Working Alliance Inventory (WAI) short form, a 12-item self-report measure derived from the full 36-item WAI (Hatcher & Gillaspy, 2006). Each item is rated on a 5-point Likert scale and loads onto one of the three factors: goals of therapy, tasks of therapy, and the bond between client and clinician; with higher scores reflecting a stronger therapeutic alliance. Taken together, these factors compromise the therapeutic concept of alliance (Bordin, 1979). An overall score is calculated by averaging the score from each of the 12 items. The full WAI correlates moderately with other alliance measures (Horvath & Greenberg, 1989). The internal consistency of the

full scale is high (.87 to .93); internal consistency for the WAI short is also high (.77-.95) (Busseri & Tyler, 2003). In the present study, the Cronbach's alpha coefficient for total scores was .92. Scores on both the full form (Horvath, 1994) and short form (Klein et al., 2003) have predicted psychotherapy outcome. Research posits that early therapy alliance is distinct from overall alliance and has important clinical implications (Goldman & Anderson, 2007). Thus, the present study measured alliance in 2 ways: early alliance was measured using the average WAI scores from the first two counseling sessions; average alliance was measured using the WAI scores across all counseling sessions for those that attended at least 3 sessions total.

Treatment engagement/adherence. The present study assessed treatment engagement/adherence in two ways. First, participants were dichotomized into those who scheduled and presented for their first scheduled therapy appointment following their initial intake assessment appointment(s) (for cases in which therapy was recommended and determined as appropriate for the clinic) (coded as 0) and those who either did not schedule a first therapy appointment following their initial assessment session (despite recommendations to do so) or they scheduled a first therapy appointment but did not show to that appointment; e.g. lack of follow through (coded as 1). Second, clients who presented to all of the first three sessions were classified as having not prematurely terminated services (coded as 0), while clients who presented to their first session but not to the others or showed to the first two sessions but not the third were classified as having prematurely terminated services (coded as 1).

Procedure

All participants were from an outpatient sample seeking treatment at a university psychology training clinic. All clients who presented to the clinic first completed an intake assessment with a graduate student clinician, under the supervision of a licensed psychologist. In this assessment, clients completed an intake interview, a measure of estimated intelligence, and the MMPI-2-RF. Following assessment, they were given feedback on their test results. Clients that were determined appropriate for the training clinic were then referred to another graduate student clinician to be seen for psychotherapy. Clients who followed through with this referral were given a symptom report measure (Outcome Questionnaire) before each therapy session and a measure of alliance (WAI) and measure of session evaluation (Session Evaluation Questionnaire, SEQ) after each session. This data was collected for each client for the duration of their treatment in the clinic.

Data Analysis

Tests of normality to determine skewness and kurtosis of variables were conducted and results can be found in Table 1 in Appendix C. Due to the large sample size and the relative robustness of analyses, a Z-score of 3.29 was used to determine large skew and kurtosis values (Field, 2009). For MMPI-2-RF scales with a large skew Z-score, both Spearman and Pearson correlations were included in the results. The data was inspected for outliers.

H1 and H2 were assessed in two ways. First, to examine the relationship between the three MMPI-2-RF validity scales and treatment engagement, Spearman correlations were calculated between the validity scales and the two engagement variables (lack of follow through and premature termination). Second, for any of the three MMPI-2-RF scales that were significant at $p < .05$ in these correlations, chi-square analyses were conducted to determine the differences between those with clinically invalid MMPI-2-RF scores and their level of treatment engagement. Determination of clinically invalid scores in the validity scales were determined in two ways, based on the clinical manual (Ben-Porath and Yossef, 2012): first, in a bi-categorical way where those whose scale elevations crossed the level determined in the interpretive manual were classified as having a clinically invalid score on that scale (valid: T-scores less than or equal to 79; invalid: T-scores greater than or equal to 80). The second way scale elevations were determined was via levels of invalidity: valid (scores less than or equal to 69); possibly invalid (T-scores 70-79); and invalid (T-scores greater than or equal to 80).

In addition, additional exploratory Spearman correlations and follow-up chi square analyses (on those scales significant at $p < .05$) were conducted to examine the

relationship of all other validity scales with lack of follow through and premature termination. Results from these exploratory analyses were descriptive and interpreted conservatively, given the high number of analyses being conducted.

To test H3, Pearson correlations were conducted (or Spearman correlations if the data was not normally distributed), using early alliance and mean alliance scores as the dependent variables in all analyses. Follow-up chi square analyses were conducted for any correlation significant at $p < .05$ using the two-level and three-level validity groupings as described above. In addition to these specific tests of H3, additional exploratory Pearson/Spearman correlations and follow up *t*-tests (when determining MMPI validity on two categories) and ANOVA (three categories of MMPI validity) were conducted on all other validity scales, to determine if they were related to alliance.

To test the remaining hypotheses, all participants with at least one Validity Scale that was invalid (N=39) were removed before conducting the analyses. Judgments about the invalidity of the report were based on the clinical manual. The numerical "invalid" score differed based on the specific Validity Scale; see details in Table B.2 in Appendix B.

To examine H4 and H5, Spearman correlations were calculated between the hypothesized MMPI-2-RF scales and treatment engagement type. Only correlations significant at the $p < .05$ level were considered for inclusion in two logistic regression analyses, with the dependent variables being lack of follow through and premature termination, respectively. Effects of multicollinearity were examined and addressed. In addition to these specific analyses for H4 and H5, additional exploratory Spearman

correlations were conducted on all other MMPI-2-RF Scales, to determine if they were also related to treatment engagement.

To examine H6, Pearson or Spearman correlations were calculated between the hypothesized MMPI-2-RF scales and early and average alliance scores. Correlations significant at the $p < .05$ level were then considered for inclusion in a linear regression analysis to determine how much variance in alliance could be accounted for by MMPI-2-RF scales. Effects of multicollinearity were examined for and addressed. In addition to these specific analyses for H6, additional exploratory correlations analyses were conducted to examine the relationship of all other MMPI-2-RF scales to alliance.

Results

Of the 164 total participants in the study, 30 (18.3%) did not attend any counseling sessions, while 134 participants (81.7%) were treatment adherent, meaning they scheduled and attended at least one therapy session following their intake assessment session. Of the 134, 126 attended 2 sessions and 111 attended at least 3 counseling sessions. The average number of sessions attended by all 164 participants was 6.83 sessions (SD = 7.68). Of all 164 participants, 96 cancelled at least one session, 73 no-showed at least once to a counseling session, and 28 rescheduled a session at least once.

H1 and H2

Contrary to hypotheses, True Response Inconsistency, Infrequent Psychopathology Responses, and Adjustment Validity were not related to treatment engagement variables; see Table 1. Exploratory analyses revealed that high VRIN was related to higher likelihood of premature termination, $r = .165$; $p = .02$, although the effect size was small.

Table 1
MMPI-2-RF Validity Scores Spearman Correlations with Lack of Follow Through and Premature Termination

MMPI-2-RF Scales	Lack of Follow-Through (N = 164)	Premature Termination (N = 134)
H1 MMPI-2-RF Scales		
TRIN	.017	- .012
Fp-r	- .023	- .022
H2 MMPI-2-RF Scale		
K-r	- .104	- .118
Exploratory Correlations		
VRIN	- .095	- .180*
F-r	.004	.002
Fs	.008	.058
FBS	- .079	- .079
L-r	.046	.014
RBS	.029	.058

Note. * p < .05
TRIN (True Response Inconsistency); Fp (Infrequent Psychopathology Responses); K (Adjustment Validity); VRIN (Variable Response Inconsistency); F (Infrequent Responses); Fs (Infrequent Somatic Responses); FBS (Symptoms Validity); L (Uncommon Virtues); RBS (Response Bias)

Follow-up chi-square analyses with the Variable Response Inconsistency T-scores 69 and lower were determined to be valid, while T-scores 70 and above were determined to be invalid) showed no association between Variable Response Inconsistency and premature termination, $X^2(1) = 2.03$, $p = .15$. Using the three-categorical method (Variable Response Inconsistency T-scores 69 and lower were determined to be valid, scores 70-79 were determined to be possibly invalid and scores 80 and above were determined to be invalid) did not change findings, $X^2(2) = 3.78$, $p = .15$.

H3

Contrary to prediction, none of the validity scales were significantly correlated with early or average alliance (Table 2).

Table 2
MMPI-2-RF Validity Scores Correlations with Alliance

MMPI-2-RF Scales	Early Alliance (N = 126)	Average WAI Score (N = 111)
H3 MMPI-2-RF Scales		
K-r	-.036	.008
L-r	.011[1]	-.064[1]
Exploratory Correlations		
VRIN	.120	.163
TRIN	-.072[1]	.027[1]
F-r	-.171[1]	-.177[1]
Fp-r	.044[1]	.009[1]
Fs	-.006[1]	-.036[1]
FBS	-.098	-.183
RBS	-.083	-.065

Note. [1] Correlations are Spearman. TRIN (True Response Inconsistency); Fp (Infrequent Psychopathology Responses); K (Adjustment Validity); VRIN (Variable Response Inconsistency); F (Infrequent Responses); Fs (Infrequent Somatic Responses); FBS (Symptoms Validity); L (Uncommon Virtues); RBS (Response Bias)

Results with Valid Profiles

The following hypotheses were conducted after controlling for validity of MMPI-2-RF report (*N*= 125 participants). Of the 125 that had clinically valid profiles, 24 did not attend any counseling sessions, 95 attended at least 2 counseling sessions, and 84 attended at least 3 counseling sessions.

H4 and H5

Spearman correlations between the two treatment engagement variables and all hypothesized MMPI-2-RF scales are found in Table 3. With regard to follow-through on treatment recommendations, H4 was generally not supported; the only relationship consistent with the hypothesis was that high scores on Cynicism were related to increased likelihood of lack of follow through on treatment recommendations. However, with regard to premature termination, H4 was generally supported; high scores on seven MMPI-2-RF scales (Juvenile Conduct Problems, Aggressiveness-Revised, Behavioral/Externalizing Dysfunction, Hypomanic Activation, Disconstraint-Revised, Antisocial Behavior,) were significantly related to increased likelihood of premature termination. H5 was not supported.

Table 3
MMPI-2-RF Scales and Lack of Follow Through and Premature Termination

MMPI-2-RF Scales	Lack of Follow Through (N = 125)	Premature Termination (N = 101)
JCP	.164	.238*
AGGR-r	.048	.215*
BXD	.067	.213*
RC9	.015	.179*
DISC-r	.100	.215*
RC4	.116	.255**
EID	.044	-.094
RC2	- .015	-.167
RC7	.033	.027
NFC	.124	.043
INTR-r	- .035	-.115
RC8	.124	.049
MLS	.012	-.041
RC3	.244**	.238**
NEGE-r	- .008	-.014

Note. ** rho <.01; * rho < .05
JCP (Juvenile Conduct Problems); AGGR (Aggressiveness-Revised); BXD (Behavioral/Externalizing Dysfunction); RC9 (Hypomanic Activation); DISC (Disconstraint-Revised); RC4 (Antisocial Behavior); EID (Emotional/Internalizing Dysfunction); RC2 (Low Positive Emotions); RC7 (Dysfunctional Negative Emotions); NFC (Inefficacy); INTR (Introversion/Low Positive Emotionality); RC8 (Aberrant Experiences); MLS (Malaise); RC3 (Cynicism); NEGE (Negative Emotionality/Neuroticism)

As shown in Table 2 in Appendix C, many of these MMPI-2-RF scales are highly correlated with each other. When all predictors were added to the regression model, the multicollinearity statistics were very high. To minimize this a theoretical and rational approach was employed. Based on the MMPI-2-RF known structure, a rational approach was employed with regard to grouping predictor scales that assess a similar domain (e.g. externalizing domain) and narrowing down the scale that represents that domain to enter into the regression analysis. Specifically, of all the externalizing domain scales that were significantly correlated with premature termination (e.g. Juvenile Conduct Problems,

Aggressiveness-Revised, Behavioral/Externalizing Dysfunction, Hypomanic Activation, Antisocial Behavior and Disconstraint-Revised), only Antisocial Behavior, which had the highest correlation with premature termination, was entered into the model and represented the externalizing domain. A logistic regression analysis was conducted to predict premature termination using Antisocial Behavior and Cynicism; see Table 4. A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished those that prematurely terminated from those that did not prematurely terminate counseling, $X^2(2) = 9.56$, $p < .001$. In the final model, when accounting for the other variables, only Antisocial Behavior significantly predicted premature termination. For every step increase in scores on Antisocial Behavior, the odds of premature termination increased by 1.05.

Table 4
MMPI-2-RF Scales Predicting Premature Termination

	B(SE)	Wald (I)	Exp(β)	95%CI
RC4	.05(.02)	4.72**	1.05	1.00-1.09
RC3	.04(.03)	2.83	1.04	.99-1.09

Note. ** r < .01; * r < .05; N = 101
RC4 (Antisocial Behavior); RC2 (Low Positive Emotions); RC3 (Cynicism)

Exploratory Spearman correlations were conducted with all other MMPI-2-RF scales and treatment engagement; see Table 5. High scores on Suicidal/Death Ideation were related to higher likelihood of follow through on treatment recommendations. Increased scale scores on Disaffiliativeness were related to lower premature termination while increased scores on Substance Abuse were related to higher premature termination. To determine the overall prediction of premature termination, Cynicism, Antisocial

Behavior, Substance Abuse and Disaffiliativeness were entered into a logistic regression. The overall model was significant, $X^2(4) = 21.35$, $p < .001$. In the final model, when accounting for the other variables, Cynicism and Disaffiliativenes significantly predicted premature termination. For every step increase in scores on Cynicism, the odds of premature termination increased by 1.09 and, for every step increase in Disaffiliativeness, the odds of premature termination decreased by .96.

Table 5
Exploratory Correlations: MMPI-2-RF Scales and Lack of Follow Through and Premature Termination

MMPI-2-RF Scales	Lack of Follow Through (N = 125)	Premature Termination (N = 101)
THD	.161	.083
RCd	.100	-.042
RC1	-.068	-.041
RC6	-.016	.017
GIC	-.074	-.105
HPC	-.074	.110
NUC	.034	.006
COG	.107	.098
SUI	-.207*	-.133
HLP	.123	.004
SFD	.129	-.062
STW	.028	-.079
AXY	-.074	-.131
ANP	.055	.059
BRF	.087	.029
MSF	-.036	.090
SUB	.058	.192*
AGG	.115	.138
ACT	.009	-.017
FML	.011	-.046
IPP	-.031	-.120
SAV	-.011	-.005
SHY	.039	-.095
DSF	-.071	-.176*
AES	-.077	-.143
MEC	.170	.174
PSYC-r	.099	.099
NEGE-r	-.008	-.139

Note. * rho < .05
THD (Thought Dysfunction); RCd (Demoralization); RC1 (Somatic Complaints); RC6 (Ideas of Persecution); GIC (Gastro-Intestinal Complaints); HPC (Head Pain Complaints); NUC (Neurological Complaints); COG (Cognitive Complaints); SUI (Suicidal/Death Ideation); HLP (Helplessness/Hopelessness); SFD (Self-Doubt); NFC (Inefficacy); STW (Stress/Worry); AXY (Anxiety); ANP (Anger Proneness); BRF (Behavior-Restricting Fears); MSF (Multiple Specific Fears); SUB (Substance Abuse); AGG (Aggression); ACT (Activation); FML (Family Problems); IPP (Interpersonal Passivity); SAV (Social Avoidance); SHY (Shyness); DSF (Disaffiliativeness); AES (Aesthetic-Literacy Interests); MEC (Mechanical-Physical Interests); PSYCH (Psychoticism); NEGE (Negative Emotionality/Neuroticism)

Table 6
Exploratory Analyses: MMPI-2-RF Scales Predicting Premature Termination

	B(SE)	Wald (I)	Exp(β)	95%CI
RC3	.09(.03)	9.15**	1.09	1.03-1.15
RC4	.05(.03)	2.46	1.05	.99-1.13
SUB	.01(.03)	.04	1.01	.95-1.06
DSF	-.05(.02)	6.15*	.96	.92-.99

Note. ** p < .01; * p < .05; N = 101
RC4 (Antisocial Behavior); RC2 (Low Positive Emotions); RC3 (Cynicism); SUB (Substance Abuse); DSF (Disaffiliativeness)

H6

Pearson/Spearman correlations between early and average alliance and all hypothesized MMPI-2-RF scales are found in Table 7. Overall, H6 was not supported; the only significant relationship was that high Aggressiveness-Revised was related to higher average alliance, which was opposite of the prediction.

Table 7
MMPI-2-RF Scales and Alliance

MMPI-2-RF Scales	Early Alliance (N=95)	Average Alliance (N=84)
AGGR-r	.172[1]	.300**[1]
DISC-r	-.032[1]	.0271
RC4	-.035[1]	.045[1]
RC7	.094	-.066
RC3	-.103[1]	-.015[1]
DSF	-.024[1]	.125[1]
RC6	-.074	-.080

Note. [1] Correlations are Spearman; **rho < .01
AGGR (Aggressiveness); DISC (Disconstraint); RC4 (Antisocial Behavior); RC7 (Dysfunctional Negative Emotions); RC3 (Cynicism); DSF (Disaffiliativenss); RC6 (Ideas of Persecution)

Exploratory Pearson and Spearman correlations conducted on all other MMPI-2-RF scales and early and average alliance (Table 8) indicated elevations on three Scales (Low Positive Emotions, Cognitive Complaints, and Behavior-Restricting Fears) were

significantly related to lower early alliance, while elevations on 10 Scales (Emotional/Internalizing Dysfunction, Demoralization, Somatic Complaints, Low Positive Emotions, Malaise, Head Pain Complaints, Inefficacy, Behavior-Restricting Fears, Interpersonal Passivity, and Shyness) were significantly related to lower average alliance. Elevations on two variables (Low Positive Emotions, Behavior-Restricting Fears) were related to both lower early and lower average alliance.

Table 8
Exploratory Analyses: MMPI-2-RF Scales and Alliance

MMPI-2-RF Scales	Early Alliance (N=95)	Average Alliance (N=84)
EID	-.078	-.280*
THD	-.031[1]	-.034[1]
BXD	.106[1]	.054[1]
RCd	-.075	-.231*
RC1	-.102	-.236*
RC2	-.215*	-.245*
RC7	.094	.066
RC8	.011[1]	.030[1]
RC9	.184[1]	.091[1]
MLS	-.090	-.312**
GIC	.057	.107
HPC	-.146	-.240*
NUC	-.121	-.215
COG	-.215*	-.194
SUI	-.143[1]	-.046[1]
HLP	-.087	-.093
SFD	-.166[1]	-.036[1]
NFC	-.140	-.259*
STW	-.063	-.215
AXY	.027	-.085
ANP	.165	.150
BRF	-.274*[1]	-.308*[1]
MSF	.001	.138
JCP	.083[1]	.007[1]
SUB	-.008	-.077
AGG	.090[1]	.057[1]
ACT	.022[1]	-.040[1]
FML	.024[1]	.135[1]
IPP	-.157	-.232*
SAV	.100	-.093
SHY	-.194	-.299**
AES	.003	-.040
MEC	.162[1]	.059[1]
PSYC-r	.034[1]	-.069[1]
NEGE-r	.078	-.108
INTR-r	-.169	-.188

Note. [1] Correlations are Spearman; ** p <.01; * p/rho < .05

EID (Emotional/Internalizing Dysfunction); THD (Thought Dysfunction); BXD (Behavioral/ Externalizing Dysfunction); RCd (Demoralization); RC1 (Somatic Complaints); RC2 (Low Positive Emotions); RC7 (Dysfunctional Negative Emotions); RC8 (Aberrant Experiences); RC9 (Hypomanic Activation); MLS (Malaise); GIC (Gastro-Intestinal Complaints); HPC (Head Pain Complaints); NUC (Neurological Complaints); COG (Cognitive Complaints); SUI (Suicidal/Death Ideation); HLP (Helplessness/Hopelessness); SFD (Self-Doubt); NFC (Inefficacy); STW (Stress/Worry); AXY (Anxiety); ANP (Anger Proneness); BRF (Behavior-Restricting Fears); MSF (Multiple Specific Fears); JCP (Juvenile Conduct Problems); SUB (Substance Abuse); AGG (Aggression); ACT (Activation); FML (Family Problems); IPP (Interpersonal Passivity); SAV (Social Avoidance); SHY (Shyness); AES (Aesthetic-Literacy Interests); MEC (Mechanical-Physical Interests); PSYCH (Psychoticism); NEGE (Negative Emotionality/Neuroticism); INTR (Introversion/Low Positive Emotionality)

An exploratory linear regression analysis using the Low Positive Emotions, Cognitive Complaints and Behavior-Restricting Fears Scales to predict early alliance indicated the 3 predictors explained 11% of the variance in early alliance, $R^2 = .11$, $F(3,86) = 5.53$, $p = .02$. With all three variables in the model, only Behavior-Restricting Fears significantly negatively predicted Early Alliance, $\beta = -.23$, $p < .05$. See Table 9.

An exploratory linear regression analysis was also conducted to predict average alliance. As shown in Table 3, Appendix C, many of the MMPI-2-RF scales that were correlated with average alliance were also highly correlated with each other. When all predictors were added to the regression model, the multicollinearity statistics were very high. To minimize this a theoretical and rational approach was employed. Based on the MMPI-2-RF known structure, a rational approach was employed with regard to grouping predictor scales that assess a similar domain (e.g. emotional dysfunction and somatic domains) and narrowing down the scale that represents that domain to enter into the regression analysis. Specifically, of all the emotional dysfunction domain scales correlated with average alliance (Emotional/Internalizing Dysfunction, Demoralization,

Low Positive Emotions, Behavior-Restricting Fears, and Inefficacy), only Emotional/Internalizing Dysfunction, which had the highest correlation with average alliance, was entered into the model and represented the emotional dysfunction domain. Similarly, for the somatic domain scales, only Somatic Complaints was entered into the model. Shyness was removed due to high correlation with Emotional/Internalizing Dysfunction (r = .62), which led to poor multicollinearity statistics when it was in the model. Thus, the final linear regression analysis used Emotional/Internalizing Dysfunction, Somatic Complaints, and Interpersonal Passivity to predict average alliance. The results of the regression indicated the 3 predictors explained 10% of the variance in average alliance, R^2 = .10, $F(3,79) = 3.06$, p = .033. However, none of the predictors were significantly related to average alliance in the presence of the other predictors entered in the model. See Table 10.

Table 9
MMPI-2-RF Scales Predicting Early Alliance

	B(SE)	95% CI	Standardized β
RC2	-.01(.00)	-.013-.003	-.15
COG	-.00(.00)	-.011-.006	-.07
BRF	-.01(.01)	-.021-.000	-.23*

Note. * p < .05; RC2 (Low Positive Emotions); COG (Cognitive Complaints); BRF (Behavior-Restricting Fears)

Table 10
MMPI-2-RF Scales Predicting Average Alliance

	B(SE)	95% CI	Standardized β
EID	-.01(.01)	-.017-.003	-.173
RC1	-.01(.01)	-.016-.005	-.119
IPP	-.01(.01)	-.015-.005	-.120

Note. EID (Emotional/Internalizing Dysfunction); RC1 (Somatic Complaints); SHY (Shyness); IPP (Interpersonal Passivity)

Discussion

Our study is among the first to empirically assess for the relationship between elevations on MMPI-2-RF scales and alliance and treatment engagement, testing not only the clinical scales after controlling for validity, but also the validity scales themselves as predictors of engagement (lack of follow through, premature termination) as well as alliance (early in therapy and average alliance). One of the strengths of the study was the prospective design: client personality was assessed before therapy variables, rather than at the same time or even in the other direction as in previous cross-sectional designed studies. Additional strengths include the use of two different indicators of treatment engagement, and use of the average alliance over multiple sessions, rather than only at one session. An additional strength was that client personality was assessed using a well-validated clinical measure that assesses multiple aspects of personality simultaneously, and considers the validity of self-report.

With regard to the validity scale analyses, none of the hypothesized relationships between validity scales and alliance or treatment engagement were supported. However, exploratory analyses suggested that higher Variable Response Inconsistency T-scores were related to higher rates of premature termination, with a small effect size; follow-up chi-square analyses testing clinical cutoffs on Variable Response Inconsistency were non-significant. One factor contributing to the lack of significance on the follow-up tests was the low number of elevated Variable Response Inconsistency T-scores (n = 12) in the dataset. In fact, the low base rate of invalid profiles on many of the validity scales likely contributed to the general lack of support for validity scale hypotheses. For some validity scales, only a small number of participants had an elevated scale: Infrequent Responses

(5 people), Infrequent Psychopathology Responses (5 people), Symptom Validity (1 person), and Response Bias (4 people). Our results are not consistent with the results from Anestis and colleagues (2014), who found higher scores on True Response Inconsistency and Infrequent Psychopathology Responses increased risk of premature termination and higher scores on Adjustment Validity lowered the risk of premature termination. However, their sample was much larger (N = 511) and thus they may have had a higher number of individuals with invalid scores. Furthermore, their definition of premature termination was different than our study; this is discussed in more detail below.

Consistent with predictions, I found that several MMPI-2-RF scales were significantly related to treatment engagement, although most findings were related to premature termination rather than lack of follow-through on first session. With regard to lack of follow-through on first session, a higher score on Cynicism was related to higher likelihood that the person would not follow-through on a first session. With regard to premature termination, higher scores on Juvenile Conduct Problems, Aggressiveness-Revised, Behavioral/Externalizing Dysfunction, Hypomanic Activation, Disconstraint-Revised, Antisocial Behavior, and Cynicism were related to higher rates of premature termination, albeit with small effect sizes. These particular MMPI scale predictors have emerged most consistently across prior studies (Anestis et al., 2015; Sellbom et al., 2008; Scholte et al., 2012; Mattson et al., 2012). Cynicism was related to both treatment engagement variables and this may be due to the interpretation of this scale. High scores on this scale indicate high distrust in others and might be related to having lower

expectations of the therapy process. This may explain why those that were elevated on this scale were not engaging with treatment.

Regarding results from exploratory analyses, higher scores on SUI were related to a higher likelihood of follow through on a first session. Further, higher scores on SUB were related to a higher rate of premature termination while higher scores on DSF were related to lower rates of premature termination. The overall logistic regression model predicting premature termination with Cynicism, Antisocial Behavior, Substance Abuse and Disaffiliativeness as predictors was significant and Cynicism and Disaffiliativeness remained significant in the model, in the presence of the other predictors. Results of the exploratory analyses should be interpreted with caution given the number of analyses conducted and the overall small effect sizes, and the logistic regression results will need to be replicated in another study. Though the findings were significant, they are potentially unstable. For example, when Cynicism and Antisocial Behavior were entered into a logistic model predicting premature termination, only Antisocial Behavior remained significant, but when both these scales were entered together with Substance Abuse and Disaffiliativeness into a model predicting premature termination, only Cynicism was significant. Likely this instability in findings was due in part to the general high correlation between MMPI scales, though we attempted to control for multicollinearity.

One reason for the inconsistencies between findings in the present study and prior literature on treatment engagement may be the differences in the operational definition of treatment engagement across studies. Our study measured treatment engagement in two ways (e.g. lack of follow through on treatment recommendations, defined by not

presenting to the first session; and premature termination, defined as not presenting to all first three counseling sessions). However, in previous literature, treatment engagement was measured using other methods (e.g. rated by the clinician, attendance to certain number of sessions, number of no-shows or cancellations). As reviewed earlier, only three previous studies have explored the relationship between MMPI-2-RF scales and treatment engagement. Anestis et al. (2014) determined premature termination by clinician report. A similar method of determining treatment engagement was used in Anestis et al., (2015), but also used the range of no-shows to sessions as an additional measure of treatment engagement. Mattson et al. (2012) determined treatment engagement based on whether participants completed a Drug Court treatment program. It is possible that our results would be different had I measured treatment engagement using an alternative method. This study could have also combined the two different variables of treatment engagement into one overall definition of treatment engagement. Further, a clinician-related assessment of treatment engagement could have provided more information on whether the discontinuation of sessions was planned or unplanned. Perhaps a client-reported symptom rating could have provided data on whether their symptoms were clinically significantly high during the last session or not.

With regard to alliance findings, opposite of predictions, no predicted associations between MMPI-2-RF scales and alliance were supported; in fact, the only significant finding was in the opposite direction of predictions (higher scores on Aggressiveness-Revised significantly predicted higher rates of average alliance, with a medium effect size, but were not related to early alliance). This particular scale can be interpreted in both elevations and low scores, this study had a range of Aggressiveness-Revised scores.

Low scores on this scale is related to passivity; elevations on the Aggressiveness-Revised scale are likely related to socially assertive or dominant behavior, rather than chronically aggressiveness behavior. This is the hypothesized explanation of this finding because the Aggression scale, which measures aggressive and violent behavior, was not correlated with alliance. Of note, our predictions were based primarily on inferences from the MMPI-2-RF and findings from other personality measures, as only one previous study (Scholte et al., 2012) has investigated the relationship between MMPI-2-RF and alliance. However, that study was conducted on an in-patient population with a personality disorder diagnosis. Further, therapy disruptive behavior was used as a proxy for alliance.

Regarding exploratory analyses, several MMPI-2-RF scales were related to both early and average alliance. Higher scores on Low Positive Emotions, Cognitive Complaints, and Behavior-Restricting Fears were related to lower rates of early alliance, all with a small effect size. A follow up regression analysis showed that these three variables accounted for 11% of the variance in early alliance; only Behavior-Restricting Fears stayed significant in the model. This amount of predicted variance by the MMPI-2-RF scales is a low percentage from a clinical interpretation perspective. Higher scores on Emotional/Internalizing Dysfunction, Demoralization, Somatic Complaints, Low Positive Emotions, Malaise, Head Pain Complaints Inefficacy, Behavior-Restricting Fears, Interpersonal Passivity and Shyness were related to lower average alliance, with small to medium effect sizes. Follow up regression analysis (with Emotional/Internalizing Dysfunction, Somatic Complaints, and Interpersonal Passivity) showed that 10% of the variance in average alliance was accounted for by the predictors; none of the predictors stayed significant in the model. Again, this amount of predicted variance by the MMPI-2-

RF scales is a low percentage from a clinical interpretation perspective. Of note, I did not see consistent findings across early and average alliance. A likely explanation for the different findings among the 2 forms of alliance is some of the participants that were used in the early alliance analyses may have prematurely terminated, if they only presented for 2 sessions. Overall, alliance results should be interpreted with caution, given the number of correlations and due to a low number of variance of alliance being accounted for by the MMPI scales.

A possible explanation for the generally non-significant alliance findings is the limited range in alliance scores. Comparison of this study's alliance scores with previous literature is limited, as previous studies used an alternative form of the WAI. For example, Cookson and colleagues (2012) and Wong and Pos (2014) used the Horvath and Greenberg (1989) version of the WAI-short form to assess alliance. Further both studies focused on a very different population; Cookson and colleagues (2012) focused on a sample of patients in an inpatient psychiatry department, while Wong and Pos (2014) focused on a sample of sample of participants diagnosed with depression from a clinical trial. Concerning the assessment of alliance, future studies could include a measure of clinician-rated alliance, which may have a different relationship with client-rated personality.

Limitations

In addition to the specific limitations noted above, our results should be interpreted in light of some additional general limitations. One potential reason for differences between our findings and prior studies is that there was no consistent referral question or treatment protocol delivered across all participants. Notably, in each of the

three prior studies examining MMPI correlates of treatment engagement, all participants were given the same treatment protocol. Thus, there is more treatment-related variance in the present study, compared to previous literature. As in other studies, our study was also limited by the use of many different clinicians, and I did not assess for clinician contributions to treatment engagement and alliance. With a larger sample size, a future study may use a nested design, hierarchical linear regression analyses, to determine specific clinician-related differences.

In addition to the heterogeneity of the referral questions in our sample, participants in our study may not have varied as much in terms of clinical elevations on MMPI scales, relative to previous studies. For example, Arbisi et al. (2013) used a veteran population, Sellbom et al. (2008) used a domestic violence intervention program participants, and Mattson et al. (2012) used participants from a court-mandated substance use treatment. The specific populations and presenting concerns selected in previous literature might have impacted MMPI-2-RF scale elevations. Specifically, previous literature used populations with more severe pathology and thus may have had more variability in MMPI scale elevations. However, the mean and standard deviation in MMPI-2-RF scales (see Table 4 in Appendix C) in the present study were comparable to some previous studies (Anestis et al., 2014; Anestis et al., 2015).

Finally, a limitation of our study was lack of diversity in participant race/ethnicity and education status. The vast majority of participants were White, female and undergraduate students attending Ohio University in their first or second year. Further, the results of this study may differ from other university populations located in more urban locations or in other countries.

Implications and Future Directions

Consistent with previous literature, our results suggest that high externalizing features are related to a risk for premature termination. Based on this information, clinicians should stay aware of the higher risk for premature termination in clients that present with aggression, juvenile conduct problems, antisocial behavior and disconstraint (e.g. risk-taking, impulsivity). Prevention of premature termination can take the form of employing motivational interviewing strategies to form mutual and clear goals the client would like to gain from counseling and reminding him/her of treatment goals during times of ambivalence. The exploratory analyses on alliance indicated that elevated scales related to emotional dysfunction, interpersonal factors, and somatic complaints are most correlated to lower average alliance. This indicates that clients that experience difficulties modulating emotions might experience difficulties forming an alliance. Thus, clinicians should be mindful of findings ways to build a closer relationship with clients earlier in treatment, especially if the focus of the clinical work will be processing the emotional dysfunction. Further, employ clinical skills directly related to emotional regulation (dialectical behavioral therapy-informed interventions) may be considered to foster a close alliance. Clinicians may also need to be mindful of creating a comfortable and safe environment with those clients that are experiencing interpersonal difficulties. For clients experiencing somatic complaints, perhaps clinicians should consider referrals to a physician, as low physical health may impact alliance with clinician and therapeutic work. Due to these particular findings being exploratory in this study, future research would need to replicate these findings.

Future studies should use a larger and more diverse sample, in alternative clinical settings, to further examine the relationships suggested by our findings. Further, future studies might code for individual clinicians, the referral question, presenting concern, and even therapy modality. Each of these unique aspects of therapy work may have an impact on alliance and treatment engagement.

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Appendix A: Previous Literature

Table A.1
Previous Literature and MMPI-2-RF

Antisocial Variables and Therapy Engagement

Study	Treatment Engagement Measure	Personality Measure (only MMPI)	Effect Sizes
Sellbom et al (2008)	Premature termination	MMPI-2; only RC scales used	RC4 (r = .13*), RC9 (r = .16*)
Scholte et al (2012)	Therapy disruptive behavior	MMPI-2 clinical, PSY-5, RC	RC4 (r = .35*), AGGR, DISC (r = .19*)
Mattson et al (2012)	Completion/noncompletion of drug court treatment	MMPI-2-RF	RC4 (r = .32**), JCP (r = -.37***), AGG (r = -.34**), DISC (r = -.36**)
Anestis et al (2015)	Premature termination	MMPI-2-RF	BXD (r=.10*), RC4 (r=.12*), JCP(r=.12*)
Anestis et al (2015)	No-show	MMPI-2-RF	BXD (r=.17**), RC4 (r=.17**), JCP (r=.17**), RC9 (r=.13**), AGG (r=.13**), AGGR (r=.13**), DISC (r=.14**)

Note. * p < .05, ** p < .01, ***p < .000; Minnesota Multiphasic Personality Inventory (MMPI-2-RF)

Validity Scales and Therapy Engagement

Study	Treatment Engagement Measure	Personality Measure (only MMPI)	Effect Sizes
Anestis et al. (2014)	Premature termination	MMPI-2-RF	TRIN (r=.08*), F-r (r=.14**), Fp-r (r=.17**), Fs (r=.14**), FBS-r (R=.15**), RBS (r=.11*), K-r (r=-.12*)

Table A.1: Continued

Note. * p < .05, ** p < .01, ***p < .000; Minnesota Multiphasic Personality Inventory (MMPI-2-RF

Emotional Dysfunction and Therapy Engagement

Study	Treatment Engagement Measure	Personality Measure (only MMPI)	Effect Sizes
Scholte et al (2012)	Therapy disruptive behavior	MMPI-2 clinical, PSY-5, RC	RC7 (r=.19*)
Anestis et al (2015)	Premature termination	MMPI-2-RF	EID (r=.12*), RC9 (r=.14**), SUI (r=.12*), NFC (r=.10*), RC2 (r=.12**), RC7 (r=.09*), STW (r=.13*), AXY (r=.13**), ANP (r=.12**), BRF (r=.13*), NEGE (r=.13**)
Anestis et al (2015)	No-Show	MMPI-2-RF	SUI (r=.14**),

Note. * p < .05, ** p < .01, ***p < .000; Minnesota Multiphasic Personality Inventory (MMPI-2-RF)

Cynicism and Therapy Engagement

Study	Treatment Engagement Measure	Personality Measure (only MMPI)	Effect Sizes
Arbisis et al. (2013)	Premature termination & no-show	MMPI-2; Cynicism scale only (RC 3)	RC3 (r=.37**)
Anestis et al (2015)	No-show	MMPI-2-RF	RC3 (r=.11*)

* p < .05, ** p < .01, ***p < .000; Minnesota Multiphasic Personality Inventory (MMPI-2-RF)

Antisocial Variables and Alliance

Study	Alliance Measure	Personality Measure (only MMPI)	Effect Sizes
Scholte et al. (2012)	Therapy Disruptive Behavior	MMPI-2 clinical, PSY-5, RC	RC4 (r=.35*), AGGR, DISC (r=.19*)

Table A.1: Continued
Interpersonal Variables and Alliance

Study	Alliance Measure	Personality Measure	Effect Sizes
Cookson et al (2012); inpatient psychiatric	WAI-client	Interpersonal style; IMI-C	hostile-dominance (r=.27*), paranoid delusion (r=-.32**), friendly-submissive (r=.25*)
Renner et al. (2012) – diagnosed with major depressive disorder	WAI-client	IIP-client	distress β =-.13** & Low WAI: high agency β = -.12* & High communion β =.15**
Johansen et al (2013); early psychosis	WAI-therapist	IIP (interpersonal problems)	submissive/hostile (r=-.46**)
Wong & Pos (2014); depression	WAI-client	Client disclosure and social inhibition	Both predicted alliance: F(3,27) = 7.45** - high inhibition = weaker WAI - high discl = stronger WAI

Note. * p < .05, ** p < .01, ***p < .000; Working Alliance Inventory (WAI); Minnesota Multiphasic Personality Inventory (MMPI-2-RF)

Attachment Variables and Alliance

Study	Alliance Measure	Personality Measure	Effect Sizes
Mallinckrodt & Jeong (2015); MA of 14 articles	WAI - client	Attachment style (CATS)	secure attachment (r=.76***) avoidant attachment (r = -.63***)
Siefert & Hilsenroth (2014); university-based community clinic	Combined Alliance Form	Relationship Questionnaire (attachment style)	attachment security (r=.30*), fearful-insecurity (r=-.39**)
Taylor et al (2014)	WAI	Experiences in close relationships (attachment) & CATS	secure attachment (r = .79**), avoidance-fearful (r=-.65**)

Note. * p < .05, ** p < .01, ***p < .000; Working Alliance Inventory (WAI); Client Attachment to Therapist Scale (CATS)

Table A.1: Continued
Personality Traits and Alliance

Study	Alliance Measure	Personality Measure	Effect Sizes
Johansen et al (2013); sz	WAI	NEO-FFI	neuroticism (r=-.33*), agreeableness (r=.32*)
Coleman (2006); outpatient community mental health center	WAI	Trait Descriptive Adjectives (five-factor)	extraversion (r=.21*), openness (r=.45**), agreeableness (r=.46**), conscientiousness (r=.30**)
Hirsh et al (2012); BPD	WAI	NEO-FFI	agreeableness, (r=.17**)
Zuroff et al (2000); major depressive disorder	Observer-rated	Perfectionism (Dysfunctional attitude scale) & self-report relationship inventory (B-L RI)	Time X Perfectionism was not significant
Shahar et al (2003)	Observer-rated	Perfectionism (Dysfunctional attitude scale) & self-report relationship inventory (B-L RI)	Perfectionism (r = -.17*), odd-eccentric personality disorder features (.22**)

Note. * p < .05, ** p < .01, ***p < .000; Working Alliance Inventory (WAI); Minnesota Multiphasic Personality Inventory (MMPI-2-RF); Inventory of Interpersonal Problems (IIP); NEO Five Factor measure (NEO-FFI)

Appendix B: MMPI-2-RF Descriptives

Table B.1
MMPI-2-RF Scales and Descriptions

Validity Scale	Scale Name	Description
CNS	Cannot Say	Unscorable items; high scores indicate that the profile cannot be interpreted
VRIN-r	Variable Response Inconsistency	Inconsistent responding to item content; high scores indicate that the profile cannot be interpreted
TRIN-r	True Response Inconsistency	Tendency to respond true (or false), leading to inconsistent response to item content; high scores generally indicate that the profile cannot be interpreted
F-r	Infrequent Responses	Items infrequently endorsed by a nonclinical population; higher scores reflect overreporting of symptoms and not genuine psychopathology
Fp-r	Infrequent Psychopathology Responses	Items infrequently endorsed even by a clinical population; higher scores reflect overreporting of symptoms and not genuine psychopathology
Fs	Infrequent Somatic Responses	Items infrequently endorsed even by those with health, medical, and physical concerns; higher scores reflect overreporting of health-related symptoms
FBS-r	Symptom Validity	The higher the score, the more likely that it reflects overreporting of somatic and cognitive scales
RBS	Response Bias	The higher the score, the more likely it reflects noncredible memory complaints
L-r	Uncommon Virtues	The higher the score, the more likely that it reflects underreporting rather than a traditional upbringing
K-r	Adjustment Validity	Higher the score, the more likely that it reflects underreporting vs. than a traditional upbringing

Table B.1: Continued

Higher-Order Scale	Scale Name	Description
EID	Emotional/Internalizing Dysfunction	Low scores reflect better-than-average emotional adjustment; higher scores reflect considerable emotional distress
THD	Thought Dysfunction	High scores reflect self-reported symptoms of thought dysfunction
BXD	Behavioral/Externalizing Dysfunction	Low scores reflect higher-than-average behavioral constraint; low scores reflect increasing severity of externalizing and acting-out behavior

Restructured Clinical Scale	Scale Name	Description
RCd	Demoralization	Low scores reflect higher-than-average life satisfaction; high scores reflect life dissatisfaction
RC1	Somatic Complaints	Low scores reflect self-reported physical well-being; high scores reflect multiple somatic complaints and preoccupation with health concerns
RC2	Low Positive Emotions	Low scores reflect a high level of psychological well-being, optimism, and social engagement; high scores reflect a lack of positive emotions, pessimism, social disengagement
RC3	Cynicism	Low scores reflect high trust in others; high scores reflect cynical beliefs and distrust of/hostility toward others

Table B.1: Continued

RC4	Antisocial Behavior	Low scores reflect below-average past antisocial behavior; high scores reflect significant history of antisocial behavior (e.g. substance misuse)
RC6	Ideas of Persecution	High scores reflect persecutory ideation and paranoia
RC7	Dysfunctional Negative Emotions	Low scores reflect below-average negative emotions; high scores reflect above-average negative emotions such as anxiety, anger and/or fear
RC8	Aberrant Experiences	High scores reflect unusual thought and perceptual processes, with higher scores reflecting psychotic symptoms
RC9	Hypomanic Activation	Low scores reflect below-average levels of energy; high scores reflect above-average levels of energy

Table B.1: Continued

Somatic/Cognitive Scale	Scale Name	Description
MLS	Malaise	Low scored reflect general well-being; high score reflect reports of poor health and other nonspecific physical complaints
GIC	Gastrointestinal Complaints	High scores reflect symptoms of gastrointestinal distress and potentially a preoccupation with such symptoms
HPC	Head Pain Complaints	High scores reflect head (and potentially neck) pain complaints
NUC	Neurological Complaints	High scores reflect vague neurological complaints
COG	Cognitive Complaints	High scores reflect vague cognitive complaints

Internalizing Scale	Scale Name	Description
SUI	Suicidal/Death Ideation	High scores reflect history (and potentially current) suicidal ideation and attempts
HLP	Hopelessness/Helplessness	High scores reflect belief that things are hopeless and cannot change
SFD	Self-Doubt	High score reflect self-doubt and lack of confidence
NFC	Inefficacy	Low scores indicate self-reliance; high scores reflect passivity, indecisiveness, feeling ineffective in coping

Table B.1: Continued

STW	Stress/Worry	Low scores indicate below-average stress or worry; high scores indicate above-average stress, worry, rumination
AXY	Anxiety	High scores reflect symptoms of anxiety
ANP	Anger Proneness	High scores reflect anger proneness and low frustration tolerance
BRF	Behavior-Restricting Fears	High scores reflect multiple fears that restrict normal activities
MSF	Multiple Specific Fears	Low scores reflect lower-than-average report of fears; high scores reflect higher-than-average report of fears and harm avoidance

Table B.1: Continued

Externalizing Scale	Scale Name	Description
JCP	Juvenile Conduct Problems	High scores reflect history of school behavior problems, potentially troubles with authority and in interpersonal relationships
SUB	Substance Abuse	High scores reflect significant past and current substance use
AGG	Aggression	Low scores reflect lower-than-average aggressive behavior; high scores reflect acts of physical aggression, violent behavior, and losing control
ACT	Activation	Low scores reflect low levels of energy and activation; high scores reflect episodes of heightened activity and energy

Table B.1: Continued

Interpersonal Scale	Scale Name	Description
FML	Family Problems	Low scores reflect conflict-free past and current family environment; high scores reflect past and/or current family conflict and lack of support
IPP	Interpersonal Passivity	Low scores reflect assertiveness, being opinionated, possibly being viewed by others as domineering and self-centered; high scores reflect submissiveness, unassertiveness, and passivity in relationships
SAV	Social Avoidance	Low scores reflect outgoingness; high scores reflect lack of enjoyment of social events and interactions, introversion
SHY	Shyness	Low scores reflect lower-than-normal social anxiety; high scores reflect high anxiety in social situations, shyness, and embarrassment/ discomfort around others
DSF	Disaffiliativeness	High scores reflect dislike of others, preference for being alone, lack of close relationships

Table B.1: Continued

PSY-5 Scale	Scale Name	Description
AGGR-r	Aggressiveness-Revised	Low scores reflect chronic passivity and submissiveness; high score reflect chronically aggressive and assertive/socially dominant behavior
PSYC-r	Psychoticism-Revised	Low scores reflect no past or current thought disturbance; high scores reflect long-standing unusual thought processes and perceptual experiences
DISC-r	Disconstraint-Revised	Low scores reflect history of overly constrained behavior; high scores reflect history of unconstrained behavior and sensation seeking
NEGE-r	Negative Emotionality/Neuroticism-Revised	Low scores reflect lower-than-average negative emotional experiences; high score reflect chronic experience of anxiety/worry, self-criticalness
INTR-r	Introverstion/Low Positive Emotionality-Revised	Low scores reflect high energy and a history of positive emotional experiences; high scores reflect a lack of positive emotional experiences, avoidance of social situations, chronically pessimistic and social introversion

Table B.1: Continued

Interest Scale	Scale Name	Description
AES	Aesthetic-Literacy Interests	Low scores reflect no interest in activities or occupations that are aesthetic/literacy in nature; high scores reflect above-average interest in such activities or occupations
MEC	Mechanical-Physical Interests	Low scores reflect no interest in activities or occupations that are mechanical or physical in nature; high scores reflect above-average interest in such activities or occupations and can also reflect sensation seeking

Table B.2
MMPI-2-RF Validity Scale Scores

MMPI-2-RF Validity Scale	Invalid Score
VRIN	> 70
TRIN	> 70
F-r	>- 120
Fp	>- 100
F	>-100
FBS	<- 100
RBS	<-100

Appendix C: Study Measures Information

WAI: Client version

Session Number_____

Date_____ Client Name_____ Clinician Name_____

Instructions: Below is a series of statements about experiences people might have with their therapy or therapist. Some items refer directly to your therapist with an underlined space - as you read the sentences, mentally insert the name of your therapist in place of _____ in the text. For each statement, please take your time to consider your own experience and then circle the appropriate number.

Important: The rating scale is not the same for all the statements. PLEASE READ CAREFULLY!

1. As a result of these sessions I am clearer as to how I might be able to change.

1	2	3	4	5
Seldom	Sometimes	Fairly Often	Very Often	Always

2. What I am doing in therapy gives me new ways of looking at my problem.

1	2	3	4	5
Seldom	Sometimes	Fairly Often	Very Often	Always

3. I believe_____likes me.

1	2	3	4	5
Always	Very Often	Fairly Often	Sometimes	Seldom

4. _____and I collaborate on setting goals for my therapy.

1	2	3	4	5
Seldom	Sometimes	Fairly Often	Very Often	Always

5. _____and I respect each other.

1	2	3	4	5
Always	Very Often	Fairly Often	Sometimes	Seldom

6. _____and I are working towards mutually agreed upon goals.

1	2	3	4	5
Always	Very Often	Fairly Often	Sometimes	Seldom

7. I feel that_____appreciates me.

1	2	3	4	5
Always	Very Often	Fairly Often	Sometimes	Seldom

8. _____and I agree on what is important for me to work on.

1	2	3	4	5
Seldom	Sometimes	Fairly Often	Very Often	Always

9. I feel _____ cares about me even when I do things that he/she does not approve of.

1	2	3	4	5
Always	Very Often	Fairly Often	Sometimes	Seldom

10. I feel that the things I do in therapy will help me to accomplish the changes that I want.

1	2	3	4	5
Seldom	Sometimes	Fairly Often	Very Often	Always

11. ___ and I have established a good understanding of the kind of changes that would be good for me.

1	2	3	4	5
Seldom	Sometimes	Fairly Often	Very Often	Always

12. I believe the way we are working with my problem is correct.

1	2	3	4	5
Always	Very Often	Fairly Often	Sometimes	Seldom

PLEASE TURN OVER

Created and Validated by Hatcher, R. L. & Gillaspy, J. A. (In Press) in *Psychotherapy Research*.

Table C.1
Tests of Normality

Variable	Outliers	Skew (SE) Z-Score	Kurtosis (SE) Z-Score
Termination		.454 (.190) .238	-1.816 (.377) -4.816
Treatment Engagement		-1.71 (.19) -9	.935 (.377) 2.480
Avg WAI Score		-1.007 (.19) - -5.3	.295 (.378) .780
VRIN		.463 (.191) 2.424	-.276 (.379) -.728
TRIN		1.742 (.191) 9.120	1.742 (.379) 4.596
F-r		.78 (.191) 4.083	-.077 (.379) -.203
Fp-r		1.052 (.191) 5.507	1.122 (.379) 2.960
Fs		1.105 (.191) 5.785	.751 (.379) 1.981
FBS-r		.549 (.191) 2.874	.424 (.379) 1.118
RBS		.229 (.191) 1.198	-.297 (.379) -.783
L-r		.904 (.191) 4.732	1.308 (.379) 3.451
K-r		.371 (.191) 1.942	.158 (.379) .416
EID		-.315 (.191) -1.649	-.428 (.379) -1.129
THD		.94 (.191) 4.921	1.534 (.379) 4.047
BXD		.735 (.191) 3.848	.296 (.379) .781
RCd		-.427 (.191) -2.235	-.603 (.379) -1.591
RC1		.489 (.191) 2.560	.06 (.379) .158
RC2		.22 (.191) 1.151	-.475 (.379) -1.253
RC3		.97 (.191) 5.078	.838 (.379) 2.211

Table C.1: Continued

RC4	.576 (.191) 3.015	-.19 (.379) -.501
RC6	.488 (.191) 2.554	-.131 (.379) -.345
RC7	.479 (.191) 2.507	-.026 (.379) -.068
RC8	.799 (.191) 4.183	.606 (.379) 1.598
RC9	.863 (.191) 4.513	1.069 (.379) 2.820
MLS	.06 (.191) .314	-.597 (.379) -1.575
GIC	.545 (.191) 2.853	-.755 (.379) -1.99
HPC	.562 (.191) 2.942	-.275 (.379) -.725
NUC	.42 (.191) 2.198	-.185 (.379) -.488
COG	-.004 (.191) -.020	-.884 (.379) -2.332
SUI	1.513 (.191) 7.921	1.146 (.379) 3.023
HLP	.556 (.191) 2.910	-.566 (.379) -1.493
SFD	-.886 (.191) -4.654	-.452 (.379) -1.193
NFC	-.154 (.191) -.806	-1.141 (.379) -3.010
STW	-.007 (.191) -.036	-.804 (.379) -2.121
AXY	.418 (.191) 2.188	-.629 (.379) -1.646
ANP	.536 (.191) 2.806	-.351 (.379) -.926
BRF	.93 (.191) 4.869	.682 (.379) 1.813
MSF	.213 (.191) 1.115	.403 (.379) 1.063
JCP	1.087 (.191) 5.701	.35 (.379) .923
SUB	.554 (.191) 2.900	-.704 (.379) -1.857

Table C.1: Continued

AGG	.877 (.191) 4.591	.627 (.379) 1.654
ACT	.889 (.191) 4.654	.217 (.379) .572
FML	.689 (.191) 3.607	-.037 (.379) .097
IPP	.589 (.191) 3.083	-.281 (.379) -.741
SAV	.559 (.191) 2.926	-.649 (.379) -1.712
SHY	.35 (.191) 1.832	-.882 (.379) -2.327
DSF	1.156 (.191) 6.052	.899 (.379) 2.372
AES	.412 (.191) 2.157	-.754 (.379) -1.989
MEC	1.115 (.191) 5.837	1.539 (.379) 4.060
AGGR-r	1.127 (.191) 5.900	1.343 (.379) 3.543
PSYC-r	.89 (.191) 4.659	1.31 (.379) 3.456
DISC-r	.744 (.191) 3.895	.345 (.379) .910
NEGE-r	.166 (.191) .869	-.229 (.379) -.604
INTR-r	.486 (.191) 2.544	-.686 (.379) -1.810

Table C.2
H4 Correlation Matrix of All MMPI-2-RF Scales

	JCP	AGGR-r	BXD	RC9	DISC-r	RC4	RC2	RC3
JCP	1	.311**	.766**	.416**	.684**	.729**	.077	.27**
AGGR-r	.311**	1	.466**	.579**	.324**	.298**	-.357**	.295**
BXD	.766**	.466**	1	.701**	.9**	.843**	.014	.31**
RC9	.416**	.579**	.701**	1	.625**	.505**	-.312**	.324**
DISC-r	.684**	.324**	.9**	.625**	1	.8**	-.036	.258**
RC4	.729**	.298**	.843**	.505**	.8**	1	.139	.273**
RC2	.077	-.357**	.014	-.312**	-.036	.139	1	.182*
RC3	.27**	.295**	.31**	.324**	.258**	.273**	.182*	1

Table C.3
H6 Correlation Matrix of MMPI-2-RF Scales Exploratory Average Alliance

	EID	RCd	RC1	RC2	MLS	HPC	BRF	NFC	IPP	SHY
EID	1	.88**	.427**	.777**	.638**	.26**	.286**	.576**	.393**	.638**
RCd	.88**	1	.453**	.605**	.602**	.294**	.347**	.621**	.226*	.465**
RC1	.427**	.453**	1	.242**	.51**	.754**	.437**	.304**	.19*	.208*
RC2	.777**	.605**	.242**	1	.61**	.069	.124	.387**	.542**	.576**
MLS	.638**	.602**	.51**	.61**	1	.354**	.219*	.343**	.311**	.337**
HPC	.26**	.294**	.754**	.069	.354**	1	.308**	.044	.033	-.022
BRF	.286**	.347**	.437**	.124	.219*	.308**	1	.348**	.050	.164
NFC	.576**	.621**	.304**	.387**	.343**	.044	.348**	1	.27**	.478**
IPP	.393**	.226*	.19*	.542**	.311**	.033	.050	.27**	1	.462**
SHY	.638**	.465**	.208*	.576**	.337**	-.022	.164	.478**	.462**	1

Table C.4
Descriptive Data on MMPI-2-RF Scales

MMPI-2-RF Scale	Mean (SD)	Range
VRIN	53.97 (10.28)	34-82
TRIN	57.23 (7.66)	48-95
F-r	68.11 (20.25)	41-120
Fp-r	61.19 (15.76)	41-111
Fs	64.62 (20.17)	29-120
FBS	66.76(14.82)	39-120
RBS	66.46(14.72)	33-105
L-r	52.29(9.58)	37-91
K-r	41.77(8.84)	24-72
EID	67.13(11.95)	36-90
THD	54.69(11.90)	36-100
BXD	49.21(10.39)	32-86
RCd	69.17(11.88)	37-88
RC1	63.49(12.91)	36-100
RC2	63.87(14.48)	33-99
RC3	51.54(9.95)	34-84
RC4	52.95(10.42)	34-82
RC6	56.29(11.32)	37-89
RC7	62.03(12.18)	34-94
RC8	58.34(12.99)	37-100
RC9	47.68(9.90)	28-80
MLS	63.58(12.24)	38-87
GIC	60.82(14.90)	45-96
HPC	57.78(12.63)	41-87
NUC	62.67(14.21)	40-100
COG	68.19(14.16)	39-96
SUI	53.54(14.55)	43-100
HLP	57.77(14.41)	40-89
SFD	66.55(11.64)	41-79
NFC	63.54(11.39)	37-83
STW	64.91(10.92)	36-91
AXY	67.03(16.25)	43-100
ANP	55.55(10.87)	38-80
BRF	55.95(12.59)	42-100
MSF	45.99(5.59)	36-65
JCP	48.39(10.07)	39-77
SUB	53.76(12.16)	40-85
AGG	49.79(10.95)	36-86
ACT	51.28(11.65)	33-87
FML	54.39(12.93)	32-90

Table C.4: Continued

IPP	53.01(10.86)	34-81
SAV	55.15(12.97)	36-82
SHY	54.41(11.73)	34-77
DSF	54.79(13.41)	34-98
AES	47.86(10.86)	32-73
MEC	45.77(7.92)	32-78
AGGR-r	46.48(9.84)	28-78
PSYC-r	56.35(11.87)	37-100
DISC-r	49.94(10.42)	30-85
NEGE-r	63.73(11.55)	39-93
INTR-r	57.85(14.14)	32-90

Note. N = 164; scores are all T-scores

Table C.5

Descriptive Data on Alliance

Alliance	Mean (SD)	Range
Early Alliance	3.15 (.52)	1.83-5.00
Average Alliance	3.14(.54)	2.33-5.00

Note. N = 126 for early alliance; N = 110 for average alliance

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