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Validity of the Working Alliance Inventory within Child Protection Services

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Abstract:

The Working Alliance Inventory (Horvath & Greenberg, 1989) remains a widely studied measure of quality of therapeutic relationships between the practitioner and client. No prior study has examined the psychometrics and validity of the Working Alliance Inventory-Short (WAI-S; Tracey & Kokotovic, 1989) in a sample of families, social workers, and trained observers within child protection services. Surveys were completed by 130 families, social workers concerning 274 cases, and observers following 165 home visits during the first wave of data collected from a randomized controlled trial of child protection services. Confirmatory factor analyses were conducted on three versions of the WAI-S and demonstrated moderate to good model fit. Convergent construct validity was found with other standardized measures. Results support the use of the WAI-S during in child protection services practice and research. Future research into family engagement in child protection social work services should focus on the working relationship.

Introduction

The therapeutic relationship between the client and therapist remains a widely studied element of successful treatment outcomes. Bordin (1979; 1994) maintained that all models of therapy rely on a basic working relationship between the practitioner and client, and this feature of therapeutic alliance is required for successful outcomes for the client. Horvath and colleagues (Horvath & Greenberg, 1986, 1989; Horvath & Symonds, 1991) adapted Bordin's seminal conceptualization of the therapeutic alliance as including the perceived bond between the practitioner and the client, the agreement of goals to be obtained during treatment, and agreement on the necessary tasks to reach those goals. This conceptualization and measurement of working alliance within child protective services is the focus of the present study. The quality of the relationship and engagement with parents during child welfare case management services represents a distinct and complex challenge for social workers and a measurement challenge of researchers. The present study aims to assess the measurement validity and psychometrics of the Working Alliance Inventory (WAI; Horvath, 1981) during child protection services using the three versions of the measure: family (client version), social worker (therapist version), and trained observer (observer version). Little research has explored the use of this measure within social work practice or child protection services despite the importance of the relationship between workers and the families they serve (Munro, 2011).

Working Alliance and Child Protective Services

Child protective workers may find engagement of families and developing a quality working relationship difficult. The ability of a social worker to engage parents and direct them through services and inherent difficulties in the child protection system can bring a family to positive outcomes (Lee & Ayon, 2004; Munro, 2011). However, social workers may find parents

difficult to engage and misinterpret parents' reluctance to services as active resistance and animosity. In other cases, social workers may be reluctant to speak in a straightforward and direct manner with parents out of a fear of creating confrontation (Altman, 2008a). With these views, it is not surprising parents may perceive communication with case workers as negative or confrontational and leaving parents disengaged and frustrated (Forrester, McCambridge, Waissebein, & Rollnick, 2008).

For parents, readiness to change is likely to include adequate knowledge of services, understanding of the needs of their family, and the impact of family deficits on child safety (Darlington, Healy, & Feeney, 2010). Parents and families already may be in a state of psychosocial crisis without contending with the involvement of child welfare services, legal difficulties, and numerous service providers. Feelings of stigma may arise when having one's children identified as needing services or being placed into care (Scholte et al., 1999). Often protection of the child is considered paramount over the preservation of the family with the parents placed in a negative light, often blamed and marginalized during services (Mizrahi, Humphreys, & Torres, 2009).

The power of the child welfare system over parents implicitly creates a dynamic that can be disempowering. Parents have reported feeling powerless and afraid of their worker (Dumbrill, 2006; Maiter et al., 2006; Darlington, Healy, & Feeney, 2010). Parents may find the decisions made by child protection teams and decisions made about services to be exclusionary towards the family and largely confrontational. Kapp and Propp (2002) found families reporting difficulty reaching workers, problems with changing workers during services, a lack of involvement in decision-making surrounding services, and general confusion about services. Feelings of disrespect and frustration with services are an obvious consequence (Dale, 2004).

Conceptualizations of parental engagement in child welfare services vary, but many emphasize the collaborative development of case goals early during involvement through the creation of mutual respect and trust (Yatchmenoff, 2005). Conveying a sense of caring, genuineness, demonstrating empathy, and being accepting and non-judgmental were reported by parents as positive qualities of a worker and valued by parents (Maiter et al., 2006). However, Marsh et al. (2012) noted limited research exists focusing on the parent-worker relationship and child welfare services outcomes. The review identified only seven studies between 2002 and 2011 that specifically studied the quality of the working relationship. Results from the review found that six of the seven studies measured working alliance from only the parents' or caregivers' perspective. The remaining study had parents and workers both as raters of the relationship (Altman, 2008b). Two studies focused on either service completion (Girvin, DePanfilis, & Daining, 2007) or staff perception of parental involvement in services (Korfmacher, Green, Spellmann, & Thornburg, 2007). Both studies were of voluntary prevention programs and found a positive relationship between the strength of the parent-worker relationship and families' participation in services.

Researchers concerned with the efficacy of services have increasingly investigated the elements of positive outcomes, including engagement during services. The strength and quality of the interpersonal relationship between the social worker and client has received increasing attention following psychological research into the importance of the therapeutic relationship. A working relationship emphasizing a strong, mutual bond between worker and parent, agreement on common goals, and collaboration on the tasks to achieve the goals are each important to the support of the family and their successful connection to needed resources. Client-centered, solution-focused skills and building of a positive relationship are similarly central to the aim of

case management (Solomon, Draine, & Delaney, 1995; Howgego, Yellowlees, Owen, Meldrum, & Dark, 2003; Chaffin & Bard, 2011).

The Working Alliance Inventory

The Working Alliance Inventory (Horvath & Greenberg, 1981, 1986, 1989) was developed to measure the quality and strength of the therapeutic relationship between a client and therapist. Three dimensions of working alliance were identified and clarified. Tasks refers to the activities and behaviors during services. Horvath and Greenberg (1989) indicate that both the professional and client must share responsibility in these tasks. A quality working relationship dependent upon both finding important and helpful to achieving the goals of the service. Goals relate to a shared sense of purpose surrounding the objective of the service. Finally, bond is the mutual respect, trust, and appreciation between the professional and the client. From this conceptualization, a set of 91 items were developed. Horvath and Greenberg established face and content validity by having experts in alliance research and practicing clinicians reduce the item pool. Research experts were asked to determine the relevance of each item to the concept of working alliance and then to identify to which dimension the item would belong. Practicing psychologists then were asked to complete a similar process with the remaining items. The resulting WAI measure captured the Bordin's three dimensions of therapeutic alliance using 36 items with 12 items per factor.

The WAI was designed to capture perceptions about the therapeutic relationship from a general theoretical perspective (Horvath & Greenberg, 1994). The WAI has the focus on numerous studies as one of the most prevalent measures of therapeutic alliance (Martin, Garske, & Davis, 2000). Tichenor and Hill (1989) found WAI scores to correlate highly with other measures of the strength and quality of the therapeutic relationship. Scores reported by therapist

and client dyads were also highly correlated. High correlations between the WAI and similar measures have been reported in other samples as well (Cecero et al., 2008).

Reporting on the relationship between WAI scores and therapeutic outcomes, Horvath et al. (2011) reported therapeutic alliance had a moderate effect ($r = 0.275$) with treatment outcomes and was similar to other meta-analytic reviews (Horvath & Symonds, 1991; Horvath, 2001; Del Re et al., 2012), though across a number of measures of alliance. Martin, Garske, and Davis (2000) found that the WAI was correlated at $r = .24$ with clinical outcomes over 80 studies and generally supported the importance of therapeutic alliance in predicting these outcomes. Furthermore, conclusions from the meta-analytic review pointed to the measure's theoretical foundation and ability to identify these aspects of therapeutic alliance as important factors in the utility of the measure and its use in research.

Reliability analyses of the WAI found adequate scores in the initial testing, and the measure demonstrated convergent, discriminant, concurrent, and predictive validities (Horvath, 1994). A meta-analytic study found a high degree and general stability of reliability scores for the WAI and WAI-S across 25 studies (Hanson, Curry, & Bandalos, 2002). Martin, Garske, and Davis (2000) reported finding high internal consistency reliability for the WAI when compared to other measures of therapeutic alliance.

Tracey and Kokotovic (1989) investigated the factor structure of the WAI using data collected with 123 therapist and 84 client ratings. Though supporting the 36-item version, the four highest loading items from each theorized dimension were selected, and additional confirmatory factor analyses were conducted. Tracey and Kokotovic found a more parsimonious, 12-item version of the WAI. Values of the fit indices obtained in subsequent analyses demonstrated a better fit with the responses from both clients and therapists. Results supported a

general alliance total score and subscale scores for each of the dimensions. This shortened version, the WAI-S, has been increasingly used in psychotherapy investigations and other research across the helping professions and has been supported as a valid alternative to the full WAI measure (Busseri & Tyler, 2003). Though empirically supported, Hatcher and Gillaspy (2006) criticize the development of the measure as highly theoretical and lacking standard data-clustering methods such as factor analysis. Much of the validation completed by Horvath and Greenberg (1989) was correlational with the item-clustering conducted through expert opinion.

Present Study and Rationale

Only one prior study (Altman, 2008b) identified by a recent meta-analysis of client-provider relationships included the WAI or WAI-S as a measure of parental engagement in child protection services (Marsh et al., 2012). No study of child welfare services has triangulated the measurement of this concept through the three versions of the WAI (client, therapist, and observer). Altman (2005) points to little empirical research of family engagement in child welfare services. Following results from one investigation, Altman (2008a) suggested the WAI may not be a valid or reliable measure of parental engagement during child welfare services. "Conceptually, the idea that engagement is equivalent to a working relationship may be a faulty one. Or working relationships in child welfare practice may not share the same conceptual validity as working relationships in voluntary practice contexts when measured by the WAI" (p. 562). Other studies have pointed to inconsistency in the measurement of client engagement in child welfare services research (Lalayants, 2012) and the importance of continued quantitative investigation of the measurement of this concept. The relationship between the family and social worker is widely agreed to be crucial during child protection services and related social work practice (Munro, 2011). However, little empirical research has explored measures of this

relationship and parental engagement. Even fewer studies have explored research instruments for measuring these concepts in child protection services and related social work practice.

The present study tested the psychometric properties of the WAI-S with a sample of child protection case triads: the child protection social workers, families involved in child protection services, and trained researchers observing direct practice between the social workers and families. Having not been used in all three versions in the UK or within child protection services, the factor validity was tested for each version of the measure including the factors of Task, Goal, and Bond. The factor analyses tested the original three factor model against a two-factor solution suggested by Hatcher and Gillaspy (2006). Additionally, convergent validity and discriminant construct validity was tested with other measures and information obtained from workers and families. It was expected the WAI-S, and all three versions of the instrument, would be supported as a viable measure of the quality of the working relationship in child protection services research.

Method

Sample and Procedure

As part of larger randomized controlled trial of the Children in Need services with a local authority in a large borough of central London UK, data were collected from families, child protection services workers, and imbedded researchers between December 2012 and August 2013. Following case allocation, researchers observed a home visit with the social worker and the primary carer of the child or children involved in services. In most cases, the second or third visit was observed by the researcher, at the same session Horvath and Greenberg (1989) originally had practitioners and clients complete the WAI. The researcher and social worker each completed a questionnaire containing a number of instruments following the observed home

visit. At the home visit, researchers asked family members' availability for a longer structured interview of the family that included completion of standardized measures including the WAI-S. Informed consent was provided to the families at both the observed home visit and prior to the completion of the larger family interview and questionnaire.

The randomized controlled trial focused on the use of Motivational Interviewing (Miller & Rollnick, 2013) within child protection services. Workers were randomly assigned to be trained in the use of Motivational Interviewing or a waitlist control for training. All families screened for inclusion in the larger study were those having been referred for children in need services with the local authority (statutory and family social services provided by local government to safeguard and promote welfare of children). Cases were excluded from the study if the case were a private law case or where no adult carer for the children were able to be identified. Other cases were excluded when a Children in Need team within the local authority was unable to accept additional cases during the trial. A total of 15% of all referred cases were excluded across the local authority for pre-specified criteria with a further under 5% being due to a services team was at capacity. In total, 610 cases were screened for inclusion with 488 (80.0%) meeting inclusion in the larger study. Social workers completed a questionnaire on all families meeting inclusion into the larger sample. From these cases, those which closed prior to the second or third visit with the social worker or those deemed inappropriate for Children in Need services were excluded. The resulting 284 families were approached by a researcher for participation in the study. Observation of a home visit was agreed to by 64.8% of families who were approached by a researcher (n = 166) with 131 of those families (79.5% of those agreeing to observation of a home visit) then agreeing to the completion of a longer interview and questionnaire. Families were compensated with a £20 high-street voucher for their time in

completing the family interview and questionnaire. The study was approved after ethical review by the University of Bedfordshire and secondarily approved by the local authority in which the study took place.

In a forthcoming paper between-group differences in WAI are reported. No differences were found in observer or parent rating of WAI, however training in Motivational Interviewing did affect social worker scoring of the WAI. Specifically, in this sample it led to workers rating their relationship with parents less positively and to have higher rates of correlation with parents and observers.

Instrumentation and Measures

Family and case characteristics. Demographic information was collected from the primary carer who completed the family interview and question. Questions were asked about their initial involvement in child protection services. The Children in Need workers provided information concerning the nature of the families' involvement in services which included their degree of concern surrounding the well-being of the children and parents and indication of other psychosocial issues affecting the family. Finally, each worker assessed the overall level of current concern for the family at the time of the observed home visit.

Worker characteristics. Information about the workers was collected through self-report including basic demographics and details about their social work qualification.

Working Alliance Inventory-Short Form. Based on Bordin's work on therapeutic working alliance (1979), the WAI-S (Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989; Tichenor & Hill, 1989) contains three subscales which include agreement on the goals of the relationship (Goal subscale), the tasks required to meet these goals (Task subscale), and the quality of the relationship between the client and practitioner (Bond subscale). Each version of the WAI-S had

language modified depending from whom the measure was completed (client, worker, researcher/observer). The WAI-S has 12 items with Likert-scale response options ranging from 1 to 7. Higher numbers indicate better working alliance with the potential range for the 4-item subscale scores each being 4 – 28, or 12 – 84 for the total score. The Cronbach alpha scores for the WAI-S versions ranged from α = .794 to .948 for the subscale scores and α = .941 to .969 for the total scores which can be considered very good (DeVellis, 1991).

Yatchmenoff scale. The Yatchmenoff scale of engagement (Yatchmenoff, 2005) is a four-dimension scale of client engagement during child protection services. The scale is comprised of 19 items and was developed using a sample of families involved in non-voluntary services for child abuse or neglect. The first subscale, Receptivity, is defined as willingness for services and recognition of the problems in the family that led to the need for services. The Buy-In subscale asks questions concerning clients' openness to services and that these services will be beneficial for the individual and family. The Working Relationship subscale asks questions about the mutual relationship and communication between the client and the worker. Lastly, the Mistrust subscale includes items concerning the clients' perception of the worker and services agency as distrustful or operating in a manipulative and malicious. Each subscale contains between 3-8 items. A total scale score measuring general engagement is calculated by summing all the items with scores ranging from 19-95. Internal consistency reliability score for the Yatchmenoff scale total score was excellent with the total scale having a Cronbach alpha score of α = .941. The receptivity (α = .755), buy-in (α = .928), working relationships (α = .846), and mistrust (α = .745) subscales each demonstrated good to adequate reliability.

Parental views of services. The primary family member/carer was asked to rate their feelings about how positively they rated their current involvement in child protection services

with the Children in Need team and how positively their social worker handled the most recent visit.

Social work views of parental involvement. Social workers were asked, in their opinion, if "the parent is positively engaged with children's services". Additionally, social workers were asked if parents or the primary carer were threatening towards professionals or non-cooperative in other ways in the past.

Results

Description of Sample

Families and cases. The primary sample of families involved in services consisted of 284 families of which 166 agreed to a researcher observing a home visit and 131 completing a later family interview and questionnaire (Table 1). The mother of the children was the most frequent respondent (87.0%) with fathers the second most frequent (9.2%). The average age of the respondent to the family interview and questionnaire was 36.03 years (SD = 10.05).

Following case allocation, families reported having their worker assigned to them for an average of 5.98 weeks (SD = 5.48) with a majority of cases having their worker for less than one month. Families reported seeing their worker an average of 3.31 times (SD = 1.79) prior to completing the family interview and questionnaire with a researcher.

Social workers rated cases in terms of the severity of the risk of maltreatment by type and following the observed home visit (Table 1). Social workers reported greatest concern for emotional abuse either during instances of domestic violence (41.0% of cases) or in general cases (39.9%). Social workers rated their concerns for the wellbeing of the children in each case as medium or high in 24.8% of cases for learning, 18.1% for health, and 29.9% for happiness of the children. Social workers reported definite concerns regarding parental mental health

including depression or anxiety problems in 30.6% of cases, other parental mental health issues in 12.4%, alcohol problems in 12.7%, and drug problems in 9.3% of cases. Definite domestic violence issues were reported in 35.8% of cases. A significant portion of cases also had reported social concerns regarding the family (Table 1).

Social workers. Cases were allocated to 54 workers, each with an average of 4.96 cases (SD = 2.59) during the larger randomized controlled trial within the local authority. Social workers were an average of 36.43 years of age (SD = 8.45), and a majority was female (81.1%). Workers reported being qualified for an average of 6.29 years (SD = 6.05). Workers were primarily in a permanent position (86.8%), qualified (100%), received their professional qualification in the UK (80.8%), and having earned a graduate degree (53.8%).

WAI-S

Missing values and assumptions. Missing values for the WAI-S measure were less than 2% for individual items in the social worker version and family versions and less than 1% for the observation version completed by researchers. Because of the low amount of missing values, these values were assumed to be missing completely at random, and multiple imputation was conducted to replace the values using StataSE statistical software version 12.0. Descriptive statistics for all items indicated limited skew and kurtosis in the data with absolute values of the skew index less than 1.646 and of the kurtosis index less than 1.455 for all items. These are below the limits for the skew index greater than 3.0 and the kurtosis index greater than 10 (Kline, 2011). The internal consistency reliability scores for the WAI-S total and subscale scores obtained for each version of the measure are presented in Table 2.

Inter-correlations. Significant correlations between each version of the WAI-S were found (Table 3). Inter-correlations for each version of the WAI-S ranged from r = .780 to r =

.967 ($p < .001$) indicating significant relationships between subscales and total scores within the same version. Considering the correlations between the family and social worker versions, correlations between the subscale and total scores were moderate with the coefficients ranging from $r = .244$ to $r = .429$, each statistically significant ($p < .001$). Observers had higher correlations with the family (coefficients ranging from $r = .466$ to $r = .625$, each $p < .001$) and with the social worker (coefficients ranging from $r = .323$ to $r = .443$, each $p < .001$).

Factor validity of WAI-S. Confirmatory factor analysis (CFA) using structural equation modeling was used to test the factor validity of the WAI-S. To assess the fit of the data to the specified measurement model, multiple indices of fit were obtained. The chi-square per degrees of freedom (χ^2/df), Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). The model chi-square statistic tests an exact-fit hypothesis which assumes little difference between model and population covariances (Kline, 2011). Due to possible issues with this statistic test, an additional metric was used to evaluate model fit which is the model chi-square statistic per degrees of freedom (χ^2/df). Bollen (1989) suggests a χ^2/df value between 2.0 and 3.0 indicates adequate model fit. SRMR is a measure of the covariance residuals between the input matrix and of the measurement model matrix reproduced by the analysis. A SRMR lower than .08 or .10 indicates good model fit (Brown, 2006). The CFI and TLI compare model fit to that of a baseline model with values greater than or equal to 0.95 indicating acceptable model fit (Hu & Bentler, 1999; Kline, 2011). Lastly, RMSEA is an index of fit that adjusts for the parsimony of the model and measures how close the model covariance matrix is to that of the observed covariances. Values between .08 and .10 are indicative of adequate fit. RMSEA values

are commonly reported with the 90% confidence interval (CI) of the estimate (Kline, 2011). Maximum likelihood estimation (MLE) method was conducted through MPlus 7.3 software.

Each version of the WAI-S and factor model was entered and an initial solution obtained. Models were revised using the provided modification indices. The largest covariance between error terms on the same factor was added but only those suggested covariances with a modification index value greater $\chi^2 > 3.84$ ($p < .05$) indicating a significant improvement in model fit. The process was repeated for each model until no additional and theoretically supported covariances were suggested with a modification index value greater than $\chi^2 = 3.84$.

The final model for the family reported WAI-S (Table 4) had marginal to adequate fit based on obtained indices of fit. The model had a significant χ^2 value of 132.83 ($p < .001$) indicating poor fit, but the χ^2/df value demonstrated adequate fit at 2.66. Marginal to adequate fit was found in further indices of fit with SRMR = .045, CFI = .929, and TLI = .902. RMSEA indicated marginal fit with a value of .113 (90% CI between .090 and .136).

The social worker reported WAI-S had markedly better model fit. A χ^2 value of 140.68 ($p<.001$) and $\chi^2/df = 2.81$ indicated adequate fit. Values of the SRMR = .030, CFI = .971, and TLI = .961 all indicate good model fit. The model had a RMSEA value of .081 (90% CI of .066 and .097).

The model for the WAI-S completed by observers demonstrated adequate model fit with $\chi^2 = 121.61$ ($p < .001$), $\chi^2/df = 2.38$, SRMR = .037, CFI = .969, and TLI = .960. RMSEA was less than .10 with an obtained value of .092 (90% CI between .071 and .113).

Hatcher and Gillaspy (2006) reported a two-factor solution for the WAI-S wherein the Goal and Task subscales are collapsed into a single factor. A similar two-factor solution for each version of the WAI-S is presented in Table 4. For each case, the two-factor model did not offer

better fit than the original three-factor model of the WAI-S (Tracey & Kokotovic, 1989). Furthermore, the obtained three-factor model were similar to those reported by Hatcher and Gillaspy (2006) in justification for their two-factor solution. Due to the similarity in fit between the two factor solutions across the three versions, the three-factor model was selected as the optimal factor model.

The resulting standardized factor loadings from the three-factor solutions are provided in Table 2 for each version of the WAI-S. The WAI-S completed by the family had standardized loadings ranging from .654 to .874 for the intended factor. Item loadings for the observer version ranged from .799 to .986. These scores indicate very good to excellent loadings. The social worker version generally demonstrated very good to excellent loadings, ranging from .636 to .965, with the exception of one item with a poor loading of .248 (Tabachnick & Fidell, 2007).

Convergent construct validity of the WAI-S. The convergent validity of the WAI-S was tested through the comparison of WAI-S scores for each version to scores on the Yatchmenoff scale (descriptive and reliability scores in Table 2) completed by the primary carer or family member (Table 5). Total WAI-S scores for the family and Yatchmenoff scale total scores were significantly, strongly, and positively correlated with $r = .765$ ($p < .001$). Similarly, Yatchmenoff scale total scores were significantly, moderately, and positively correlated with both the WAI-S total scores completed by the social worker ($r = .406$, $p < .001$) and by the observer ($r = .561$, $p < .001$). With the Yatchmenoff scale total and subscale scores, each version of the WAI-S total and subscale scores were significantly correlated.

Two additional questions were asked of parents or the primary carer of the children involved in the case: “How would you describe your feelings about your involvement with Children’s Services at this time?” and “If you were going to rate how well your worker handled

that meeting with you on a scale from 1 (very badly) through 4 (OK) to 7 (very well) what score would you give them?" The WAI-S total scores from the family version were significantly related to their answers concerning feelings about their involvement in services ($r = .676$, $p < .001$) and how the social worker handled their most recent meeting ($r = .681$, $p < .001$). Lastly, social workers were asked to rate each families' overall engagement, and those families deemed not to be engaged had significantly lower total scores on the WAI-S as reported by the family ($t = 3.237$, $df = 120$, $p=.002$, Cohen's $d = .90$), social worker ($t=13.976$, $df=60.250$, $p<.001$, Cohen's $d = 2.22$), and observer ($t = 4.380$, $df = 158$, $p = .004$, Cohen's $d = .96$). These results added further evidence to the convergent validity of the WAI-S.

Discriminant and known-groups validity of the WAI-S. It was hypothesized that the overall quality of the working relationship would not be associated with factors surrounding the family and the concern of the social worker when assessing the needs of the family. No significant association was found between any version of the WAI-S total scores and the degree of concern about alcohol problems, illicit substance use, domestic violence problems, prior involvement in child services, other mental health problems, or possible learning disabilities with the parents (all $p>.05$). Social workers did report significantly lower total scores on the WAI-S for those families assessed as having suspected problems with depression ($F(2, 262) = 7.285$, $p = .001$, $\eta^2 = .053$), however differences were not found on the other versions of the WAI-S for these families.

Social workers also reported on their degree of concern for family-level social issues such as financial, housing, social isolation of the family, and wider family relationship problems. No association was found between the WAI-S total scores on any version and reported concerns for family financial problems, concerns over housing, and concerns about the social isolation of

the family. Social worker reported WAI-S total scores were significantly associated with their assessment wider family relationship problems ($F(2, 262) = 3.659$, $p = .027$, $\eta^2 = .027$). Social workers reported significantly lower WAI-S total scores for those families they suspected as having wider family relationship problems ($M = 54.87$, $SD = 13.58$) when compared to those families assessed as having no such suspected problems ($M = 60.43$, $SD = 14.69$). Differences were not found on the other versions of the WAI-S for families with possible wider family relationship problems. Overall social worker concern for families was not significantly related to WAI-S total scores reported by the family or observer. Social work WAI-S totals scores were associated with overall concern ($r = -.207$, $p = .001$), though weakly.

Social workers were asked if families or the primary carer had been physically threatening or non-cooperative with services in the past. Social workers perceived a poorer working relationship with the parents having a reported history of threatening behaviors ($t = 2.767$, $df = 262$, $p = .006$, Cohen's $d = .65$). Observer and family WAI-S total scores did not differ between those groups. Social workers were asked to report if a family had been non-cooperative in the past. Families identified as non-cooperative in the past had significantly lower WAI-S total scores reported by the family ($t = 2.077$, $df = 42.989$, $p = .044$, Cohen's $d = .45$), social worker ($t = 6.350$, $df = 262$, $p < .001$, Cohen's $d = .91$), and by the observer ($t = 2.461$, $df = 61.945$, $p = .032$, Cohen's $d = .38$).

Social worker characteristics and WAI-S total scores. Age of the social worker was not associated with WAI-S scores as reported by the family and observer ($p > .05$). For WAI-S total scores reported by the social worker, a weak yet significant correlation was found ($r = .157$, $p = .013$) with social worker age indicating older social workers perceived a slightly higher working relationship with families. Similarly, social workers with more time since qualification as a

social worker reported greater perceived working relationships with families though the association was weak ($r = .163$, $p = .011$). WAI-S total scores reported by the observers and families were not significantly related to the length of time that the social worker had been qualified. Gender of the worker was not significantly related ($p > .05$) to WAI-S total scores on any version of the measure.

Discussion and Applications to Practice

This research was intended as an evaluation of the WAI-S and a validation of the factor and psychometric validities within a unique area of social work practice. No prior research has evaluated all three versions of the WAI-S using child protection case triads. WAI-S scores within each case triad were highly correlated, although the researchers observing home visits reported scores which were more closely associated with those scores reported by the parents, similar to results from prior studies of working alliance (Tryon, Blackwell, & Hammell, 2007). The social worker and parent WAI-S scores were moderately associated but less so than observer and parent scores.

Tests of the factor validity of the WAI-S revealed modest support for the psychometric properties of the measure. High internal consistency reliability scores obtained for each total and subscale score were found. Results of the factor analyses for each version of the WAI-S offer general support for the constituent items representing the factors of Goal, Task, and Bond. The three models for the WAI-S met criteria for model fit using conventional indices of fit. The analyses indicated modest to adequate fit for each model. Statistical results obtained from the CFA conducted on each version of the WAI-S are similar to those reported by Hatcher and Gillaspy (2006) during a study of WAI-S scores collected from clients and therapists at a university psychotherapy clinic.

Some of the issues with model fit might be explained by the high correlation between the three factors of the WAI-S. Horvath and Greenberg (1989) reported on the high degree of association between the three factors in the WAI ($r = .69$ to $r = .92$). Further studies by Brusseri and Tyler (2003) as well as Hatcher and Gillaspy (2006) found similar correlation coefficients among the WAI subscale scores, ranging between $r = .66$ and $r = .95$ as reported by Brusseri and Tyler (2003). Hatcher and Gillaspy (2006), similar to Altman (2008b), suggest that the distinction between the Task and Goal dimensions may not resonate with clients or even social workers when completing the measure. Hatcher and Gillaspy (2006) suggested that researchers observing practice might have a greater appreciation for the distinction, but the current study found similar inter-correlations among all versions of the WAI-S regardless of who completed the measure. Additionally, the two-factor model of the WAI-S collapsing the Task and Goal factors (e.g., Hatcher & Barends, 1996; Andrusyna, Tang, DeRubeis, & Luborsky, 2001) was not found to be a better factor model in the current study when compared to the three-factor model.

The family reported scores for the WAI-S demonstrated poorer model fit relative to the other two versions of the measure. Engagement in services is a multi-faceted process associated with not only the worker and the client, but also agency and system factors (Altman, 2008a; Darlington, Healy, & Feeney, 2010). Marsh et al. (2012) concluded that the WAI may not fully capture the experience of parents and their perception of the quality of the working relationship during their involvement in child welfare services, especially during non-voluntary services surrounding the possible or actual removal of a child from the family home.

The WAI-S measures a general reported quality of the working relationship thus comparing scores to an additional measure of client engagement was important as a test of the convergent construct validity. The Yatchmenoff scale, developed directly within child protection

services, offered an opportunity to test the association of the WAI-S to a services-specific measure of client engagement. Strong and significant correlations between the versions completed by the family of each measure were found. Importantly, this signified conceptual and construct for families. Additionally, general agreement was found between the WAI-S scores and several general questions about their feelings about their social worker, involvement in services, and social worker perceptions of the families' general engagement. Discriminant construct validity of the WAI-S was demonstrated as scores were largely unrelated to circumstances surrounding the families' involvement in services, social workers' level of concern for families, or characteristics of the social workers assigned to the cases.

In light of these results, limitations of the current research must be taken into account. Though a large study of 488 child protection cases, the study involved a sample of child protection services from a single borough in central London. It is possible that other samples of families and social workers might report different scores on these measures. The final sample of 131 families agreeing to an observed home visit and completing an interview and questionnaire likely includes sampling bias. Despite this, the sample of child protection services cases, their assigned workers, and trained research observers was appropriate for the purpose of assessing the psychometric qualities of the WAI. Information was not able to be gained from 284 families who did not consent to participation after deemed appropriate for services and not having their case closed early. Whether inclusion of their views and reports on the WAI-S would have altered results from analyses cannot be determined. The interpretation of the confirmatory factor analyses should also be done with caution. Criteria for model fit indices vary and alternative models may exist that better explain the covariances between items of the WAI-S. Additionally,

the shorter version of the WAI was used not allowing for a fuller investigation of the 36-item version examined such as analyses conducted by Hatcher and Gillaspy (2006).

Additionally, the data was collected from the first wave of data collected from a larger randomized controlled trial of Motivational Interviewing within child protection services. Though between-groups differences were beyond the scope of the present study, training of child protection social workers affected their estimation of their relationship with the families interviewed. Some of the correlation coefficients between versions of the WAI-S must then be interpreted with caution. The WAI may be susceptible to training or other affects such as influence organizational cultures or understandings of the working relationship. However, it is unlikely that the factor structure and testing of factor structure of the WAI-S would have been affected by training social workers in the Motivational Interviewing.

The relationship between social workers and the parents they work with in child protection work is often characterized as of central importance (Munro, 2011). It is seen as essential for engaging families in work to protect children and create meaningful change. Indeed, "relationship based" social work is having a resurgence in UK social work, where the importance of the therapeutic relationship is considered to have been lost in a welter of institutional and bureaucratic reforms. Social work researchers and child protection services have the opportunity to use the WAI-S to provide valuable feedback to workers and families as to the current strength and quality of the working alliance within a case. Identification of low levels of family engagement or poor working alliance would allow child protection workers to work further to engage families and improve child safety and wellbeing outcomes. Hanson et al. (2002) explain that the WAI has the advantages of widespread use and popularity when measuring working alliance and completed easily by a social worker, family member, or an observer of practice.

Furthermore, the strong theoretical foundation for the measure and alignment with therapeutic processes are familiar to practitioners and researchers.

Yet while there is widespread agreement on the importance of the relationship, there has been remarkably little research looking at how the relationship can be measured. This study reports on the use of WAI-S to measure the relationship. Results suggested that, whether rated by the worker, the family or the independent researcher there is agreement about key elements of the quality of the relationship. Exploring the predictive validity of the WAI-S is crucial, and indeed of other measures of engagement or relationships. Does the relationship between worker and parents predict child safety and well-being, or other important outcomes (e.g., parental well-being)? Future research should focus on whether outcomes are related to successful engagement of parents in social work interventions in child protection services. As child protection social work remains a challenging and difficult area of practice, identification of those outcomes most associated with the influence of the worker could have important implications for research, the training and development of social workers, and how a child services organization works to support their workers' efforts with families.

References

Altman, J. C. (2005). Engagement in children, youth, and family services: Current research and best practices. In G. Mallon & P. Hess (Eds.), *Child welfare for the twenty-first century: A handbook of practices, policies and programs* (pp. 72-86). New York: Columbia University Press.

Altman, J. C. (2008a). Engaging families in child welfare services: Work versus client perspectives. *Child Welfare, 87*(3), 41-61.

Altman, J. C. (2008b). A study of engagement in neighborhood-based child welfare services. *Research on Social Work Practice, 18,* 555-564. doi: 10.1177/1049731507309825

Andrusyna, T. P., Tang, T. Z., DeRubeis, R. J., & Luborsky, L. (2001). The factor structure of the Working Alliance Inventory in cognitive-behavioral therapy. *Journal of Psychotherapy Practice & Research, 10,* 173-178.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.

Bordin, E.S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory Research and Practice, 16,* 252-260. doi: 10.1037/1040-3590.15.2.193

Bordin, E.S. (1994). Theory and research on the therapeutic alliance: New directions. In A. O. Horvath & L.S. Greenberg (Eds.), *The working alliance: Theory, research, and practice*. (pp. 13-37). New York: Wiley.

Brown, T. A. (2006). Confirmatory factor analysis for applied research. New York: The Guilford Press.

Busseri, M., & Tyler, J. (2003). Interchangeability of the Working Alliance Inventory and Working Alliance Inventory, Short Form. *Psychological Assessment, 15,* 193-197. doi: 10.1037/1040-3590.15.2.193.

Cecero, J. J., Fenton, L. R., Nich, C., Frankforter, T. L., & Carroll, K. M. (2008). Focus on therapeutic alliance: The psychometric properties of six measures across three treatments. *Psychotherapy, 38,* 1-11. doi: 10.1037/0033-3204.38.1.1.

Chaffin, M., & Bard, D. (2011). Changes in parental depression symptoms during family preservation services. *Child Abuse and Neglect, 35,* 448-458. doi:10.1016/j.chiabu.2011.02.005

Dale, P. (2004). 'Like fish in a bowl': Parent's perceptions of child protection services. *Child Abuse Review, 13,* 137-157. doi: 10.1002/car837

Darlington, Y., Healy, K., & Feeney, J. A. (2010). Challenges in implementing participatory practice in child protection: A contingency approach. *Children and Youth Services Review, 32,* 1020-1027. doi:10.1016/j.childyouth.2010.03.030

Del Re, A. C., Flückiger, C., Horvath, A. O., Symonds, D., &Wampold, B. E. (2012). Therapist effects in the therapeutic alliance–outcome relationship: A restricted-maximum likelihood meta-analysis. *Clinical Psychology Review, 32,* 642-649. doi:10.1016/j.cpr.2012.07.002

DeVellis, R. F. (1991). *Scale development: Theory and applications*. Newbury Park: Sage.

Dumbrill, G. C. (2006). Parental experience of child protection intervention: A qualitative study. *Child Abuse and Neglect, 30,* 27-37. doi:10.1016/j.chiabu.2005.08.012

Forrester, D., McCambridge, J., Waissbein, C., & Rollnick, S. (2008). How do child and family social workers talk to parents about child welfare concerns? *Child Abuse Review, 17,* 23-25. doi: 10.1002/car.981

Girvin, H., DePanfilis, D., & Daining, C. (2007). Predicting program completion among families enrolled in a child neglect preventive intervention. *Research on Social Work Practice, 17,* 674-685. doi 10.1177/1049731507300285

Hanson, W. E., Curry, K. T., & Bandalos, D. L. (2002). Reliability generalization of Working Alliance Inventory scale scores. *Educational and Psychological Measurement, 62,* 659-673. doi: 10.1177/0013164402062004008

Hatcher, R. L., & Barends, A. W. (1996). Patients' view of the alliance in psychotherapy: Exploratory factor analysis of three alliance measures. *Journal of Consulting and Clinical Psychology, 64,* 1326-1336.

Hatcher, R. L., & Gillaspy, J. A. (2006). Development and validation of a revised short version of the working alliance inventory. *Psychotherapy Research, 16,* 12-25. doi: 10.1080/10503300500352500.

Horvath, A. O. (1981). An exploratory study of the working alliance: Its measurement and relationship to therapy outcome. Unpublished doctoral dissertation, University of British Columbia, Canada.

Horvath, A.O. (1994). Empirical validation of Bordin's pantheoretical model of the alliance: The working alliance inventory perspective. In A.O. Horvath & L.S. Greenberg (Eds.), *The working alliance: Theory, research, and practice* (pp. 109-128). New York: John Wiley & Sons.

Horvath, A. O. (2001). The alliance. *Psychotherapy, 38,* 365-372.

Horvath, A. O., Del Re, A. C., Flückiger, C., & Symonds, D. (2011). Alliance in individual psychotherapy. *Psychotherapy, 48,* 9-16. doi: 10.1037/a0022186

Horvath, A.O., & Greenberg, L.S. (1989). Development and validation of the working alliance inventory. *Journal of Counseling Psychology, 36,* 223-233. doi: 10.1037/0022-0167.36.2.223

Horvath, A.O., & Greenberg, L.S., (1986). The development and validation of the working alliance inventory. In L.S. Greenberg & W.M. Pinsof (Eds.), *The psychotherapeutic process: A research handbook* (pp. 529-556). New York: The Guilford Press.

Horvath, A.O., & Symonds, B.D. (1991). Relation between working alliance and outcome in psychotherapy: A meta-analysis. *Journal of Counseling Psychology, 38,* 139-149. doi: 10.1037/0022-0167.38.2.139

Howgego, I.M., Yallowlees, P., Owen, C., Meldrum, L., & Dark, F. (2003). The therapeutic alliance: The key to effective patient outcome? A descriptive review of the evidence in community mental health case management. *Australian and New Zealand Journal of Psychiatry, 37,* 169-183.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6,* 1-55. doi: 10.1080/10705519909540118.

Kapp, S. A., & Propp, J. (2002). Client satisfaction methods: Input from parents with children in foster care. *Child and Adolescent Social Work Journal, 19,* 227-245.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: The Guilford Press.

Korfmacher, J., Green, B., Spellmann, M., & Thornburg, K.R. (2007). The helping relationship and program participation in early childhood home visiting. *Infant Mental Health Journal 28,* 450-480. doi 10.1002/imhj.20148

Lalayants, M. (2012). Parental engagement in child safety conferences: The role of parent representatives. *Child Welfare, 91*(6), 9-72.

Lee, C. D., & Ayon, C. (2004). Is the client-worker relationship associated with better outcomes in mandated child abuse cases? *Research on Social Work Practice, 14,* 351-357. doi: 10.1177/1049731504265833

Maiter, S., Palmer, S., & Manji, S. (2006). Strengthening social worker-client relationships in child protective services: Addressing power imbalances and 'ruptured' relationships. *Qualitative Social Work, 5,* 167-186. doi: 10.1177/1473325006064255

Marsh, J. C., Angell, B., Andrews, C. M., & Curry, A. (2012). Client-provider relationship and treatment outcome: A systematic review of substance abuse, child welfare, and mental health services research. *Journal of Society for Social Work and Research, 3,* 233-267. doi: 10.5243/jsswr.2012.15

Martin, D.J., Garske, J.P., Davis, K. (2000). Relation of the therapeutic alliance with outcome and other variables: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 68,* 438-450. doi: 10.1037//0022-006X.68.3.438

Miller, W. R., & Rollnick, S. (2013). *Motivational Interviewing: Helping people change* (3rd ed.). New York: Guilford Publications, Inc.

Mizrahi, T., Humphreys, M. L., & Torres, D. (2009). The social construction of client participation: The evolution and transformation of the role of service recipients in child welfare and mental disabilities. *Journal of Sociology and Social Welfare, 36*(2), 35-61.

Munro, E. (2011). *The Munro review of child protection: final report, a child-centred system* (Department for Education CM, 8062). London, UK: The Stationery Office. Retrieved from https://www.gov.uk/government/publications/munro-review-of-child-protection-final-report-a-child-centred-system

Scholte, E. M., Colton, M., Casas, F., Drakeford, M., Roberts, S., & Williams, M. (1999). Perceptions of stigma and user involvement in child welfare services. *British Journal of Social Work, 29,* 373-391.

Solomon, P., Draine, J., & Delaney, M. A. (1995). The working alliance and consumer case management. *The Journal of Mental Health Administration, 22,* 126-134.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Allyn and Bacon.

Tichenor, V., & Hill, C. E. (1989). A comparison of six measures of working alliance. *Psychotherapy, 26,* 195-199. doi: 10.1037/h0085419

Tracey, T.J., & Kokotovic, A.M. (1989). Factor structure of the Working Alliance Inventory. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1,* 207-210. doi: 10.1037/1040-3590.1.3.207

Tryon, G.S., Blackwell, S.C., & Hammel, E.F. (2007). A meta-analytic examination of client therapist perspectives of the working alliance. *Psychotherapy Research, 17,* 629-642. doi: 10.1080/10503300701320611

Yatchmenoff, D. K. (2005). Measuring client engagement from the client's perspective in nonvoluntary child protection services. *Research on Social Work Practice, 15,* 84-96. doi: 10.1177/1049731504271605

Table 1: Demographics of sample, families, workers, and case information

Family or Worker Characteristic	N (%)	M (SD)
Respondent		
Mother	114 (87.0%)	
Father	12 (9.2%)	
Other	5 (3.9%)	
Age of respondent		36.03 (10.05)
Time social worker assigned to case (weeks)		5.98 (5.48)
Number of times family has visited with social worker		3.31 (1.79)
Number of cases with medium or high concern for abuse:		
Physical abuse	76 (28.4%)	
Emotional abuse from domestic violence	110 (41.0%)	
Emotional abuse not from domestic violence	107 (39.9%)	
Sexual abuse	16 (6.0%)	
Neglect	62 (23.1%)	
Number of cases with medium or high concern for child concerns:		
Learning well	61 (24.8%)	
Health and development	47 (18.1%)	
Happy and secure	77 (29.9%)	
Number of cases with definite parental and social issues:		
Depression or anxiety	82 (30.6%)	
Personality disorder	9 (3.4%)	
Other mental health conditions	33 (12.4%)	
Alcohol misuse	34 (12.7%)	
Drug-taking	25 (9.3%)	
Domestic violence	96 (35.8%)	
Learning disability	6 (2.2%)	
Involved in social services as a child	49 (18.6%)	
Financial problems	57 (21.3%)	
Housing issues	91 (34.1%)	
Social isolation	43 (16.0%)	
Wider family problems	84 (31.3%)	
Family threatening or aggressive towards professional in the past (yes)	24 (9.0%)	
Family non-cooperative in other ways per social worker (yes)	71 (26.7%)	
Parent positively engaged in services per social worker (yes)	229 (85.8%)	
Number of cases allocated per social worker		4.96 (2.59)
Age of social worker		37.07 (7.91)
Gender of social worker (female)	43 (81.1%)	
Qualified as a social worker (yes)	54 (100%)	
Qualified in the United Kingdom (yes)	42 (80.8%)	
Time since qualification as social worker (years)		6.29 (6.05)
Permanent position (yes)	46 (86.8%)	
Highest level of academic qualification		
Diploma	5 (9.6%)	
Bachelors	19 (36.5%)	
Masters	28 (53.8%)	

Table 2: WAI-S and Yatchmenoff scale reliability scores and standardized factor loadings

Scores and Items	Family			Social Worker			Observer		
	M (SD)	Cronbach α	Std. Loadings	M (SD)	Cronbach α	Std. Loadings	M (SD)	Cronbach α	Std. Loadings
WAI-S Total	61.67 (18.29)	.941		58.12 (13.74)	.951		57.82 (15.72)	.969	
WAI-S Goal subscale	21.26 (6.40)	.820		19.79 (4.52)	.794		19.90 (5.52)	.924	
Item 4*	5.91 (1.84)		.654	5.67 (1.30)		.248	5.16 (1.51)		.838
Item 6	5.03 (2.20)		.799	4.80 (1.48)		.852	4.82 (1.57)		.799
Item 10*	5.15 (1.96)		.680	4.59 (1.58)		.636	5.27 (1.49)		.915
Item 11	5.10 (1.96)		.798	4.70 (1.45)		.923	4.65 (1.54)		.911
WAI-S Task subscale	19.25 (6.57)	.841		18.94 (5.47)	.945		18.46 (5.69)	.948	
Item 1	4.81 (1.91)		.799	4.78 (1.50)		.892	4.73 (1.44)		.930
Item 2	4.12 (2.10)		.655	4.64 (1.49)		.874	4.31 (1.61)		.986
Item 8	5.23 (1.92)		.837	4.89 (1.45)		.918	4.79 (1.49)		.921
Item 12	5.08 (2.06)		.784	4.65 (1.45)		.918	4.63 (1.58)		.878
WAI-S Bond subscale	20.65 (6.87)	.890		19.56 (4.54)	.845		19.45 (5.40)	.930	
Item 3	5.27 (1.91)		.782	4.55 (1.42)		.855	5.20 (1.32)		.861
Item 5	5.23 (2.05)		.874	4.88 (1.38)		.626	4.55 (1.52)		.869
Item 7	5.10 (2.02)		.838	5.60 (1.18)		.642	4.84 (1.54)		.864
Item 9	4.85 (2.09)		.825	4.55 (1.50)		.965	4.86 (1.53)		.921
Yatchmenoff scale Total	69.12 (15.67)	.941							
Receptivity	14.30 (3.94)	.755							
Buy-In	27.65 (7.83)	.928							
Working Relationship	16.15 (3.45)	.849							
Mistrust*	7.03 (2.87)	.745							

*Reverse coded and scored items or subscale

Table 3: Correlation coefficients* between the total and subscale scores for each version of the WAI-S

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Family WAI-S Goal	-	.839	.832	.943	.365	.449	.402	.434	.625	.590	.637	.652
2. Family WAI-S Task	.839	-	.810	.935	.300	.429	.359	.402	.502	.466	.554	.536
3. Family WAI-S Bond	.832	.810	-	.939	.274	.342	.290	.339	.491	.462	.580	.539
4. Family WAI-S Total	.943	.935	.939	-	.353	.427	.383	.415	.573	.541	.619	.610
5. Social worker WAI-S Goal	.365	.300	.274	.353	-	.853	.780	.927	.327	.356	.244	.328
6. Social worker WAI-S Task	.449	.429	.342	.427	.853	-	.867	.966	.428	.443	.346	.429
7. Social worker WAI-S Bond	.402	.359	.290	.383	.780	.867	-	.934	.392	.403	.323	.394
8. Social worker WAI-S Total	.434	.402	.339	.415	.927	.966	.934	-	.413	.431	.333	.415
9. Observer WAI-S Goal	.625	.502	.491	.573	.327	.428	.392	.413	-	.931	.812	.967
10. Observer WAI-S Task	.590	.466	.462	.541	.356	.443	.403	.431	.931	-	.787	.959
11. Observer WAI-S Bond	.637	.554	.580	.619	.244	.346	.323	.333	.812	.787	-	.913
12. Observer WAI-S Total	.652	.536	.539	.610	.328	.429	.394	.415	.967	.959	.913	-

* Correlation coefficients all significant at the $p < .001$ level and significant after Bonferroni correction for multiple comparisons ($p < .05$ for 66 comparisons)

Table 4: Summary of CFA final model fit for each version and factor solution of the WAI-S

Scale	χ^2	χ^2/df	SRMR	CFI	TLI	RMSEA	90% CI
Family reported WAI-S (three-factor solution)	132.831*	2.66	.045	.926	.902	.113	.090, .136
Family reported WAI-S (two-factor solution)	115.182*	2.26	.043	.943	.926	.098	.075, .122
Social Worker reported WAI-S (three-factor solution)	140.68*	2.81	.030	.971	.961	.081	.066, .097
Social Worker reported WAI-S (two-factor solution)	146.948*	2.83	.030	.969	.961	.082	.066, .097
Observer reported WAI-S (three-factor solution)	121.605*	2.38	.037	.969	.960	.092	.071, .113
Observer reported WAI-S (two-factor solution)	130.559*	2.46	.037	.966	.958	.094	.074, .115

* χ^2 score is significant at the $p<0.001$ level

Table 5: Correlations between WAI-S and Yatchmenoff scale scores

	Yatchmenoff scale				
WAI-S scales and version	Receptivity	Buy-In	Working Relationship	Mistrust	Total
Family WAI-S Goal	.485***	.620***	.788***	-.648***	.722***
Family WAI-S Task	.475***	.685***	.745***	-.603***	.735***
Family WAI-S Bond	.412***	.599***	.812***	-.642***	.697***
Family WAI-S Total	.519***	.668***	.822***	-.676***	.765***
Social worker WAI-S Goal	.272**	.314***	.230*	-.258**	.320***
Social worker WAI-S Task	.343***	.425***	.317**	-.347***	.426***
Social worker WAI-S Bond	.303***	.372***	.302**	-.320***	.383***
Social worker WAI-S Total	.322***	.399***	.314**	-.337***	.406***
Observer WAI-S Goal	.389***	.502***	.525***	-.441***	.545***
Observer WAI-S Task	.365***	.484***	.477***	-.443***	.520***
Observer WAI-S Bond	.331***	.463***	.614***	-.451***	.530***
Observer WAI-S Total	.382***	.511***	.568***	-.470***	.561***

*** Correlation significant at the $p < .001$ level and significant after Bonferroni correction for multiple comparisons ($p < .05$ for 60 comparisons)

**. Correlation is significant at the $p < .01$ level

*. Correlation is significant at the $p < .05$ level