Therapeutic Alliance in Telephone-Administered Cognitive-Behavioral Therapy for Hematopoietic Stem Cell Transplant Survivors

Allison J. Applebaum[1], **Katherine N. DuHamel**[1], **Gary Winkel**[3], **Christine Rini**[2], **Paul B. Greene**[3], **Catherine E. Mosher**[4], and **William H. Redd**[3]

[1]Memorial Sloan-Kettering Cancer Center, New York, NY, USA

[2]University of North Carolina at Chapel Hill

[3]Department of Oncological Sciences, Mount Sinai School of Medicine, New York, NY, USA

[4]Indiana University-Purdue University, Indianapolis, IN, USA

Abstract

Objective—A strong therapeutic alliance has been found to predict psychotherapeutic treatment success across a variety of therapeutic modalities and patient populations. However, only a few studies have examined therapeutic alliance as a predictor of psychotherapy outcome among cancer survivors, and none have examined this relation in telephone administered cognitive behavioral therapy (T-CBT). This study evaluated the extent to which therapeutic alliance affected psychotherapy outcomes in survivors of hematopoietic stem cell transplantation (HSCT), a treatment for some cancers.

Methods—Forty-six patients enrolled in a randomized clinical trial of T-CBT for posttraumatic stress disorder (PTSD) completed a baseline assessment (including self-report measures of PTSD symptoms, depression, and general distress), 10 individual T-CBT sessions, and follow-up assessments at 6, 9, and 12 months post-baseline. Therapeutic alliance was assessed after the third T-CBT session with the Working Alliance Inventory, which yields overall and subscale (task, bond, and goal) scores.

Results—Analyses revealed that higher total therapeutic alliance scores prospectively predicted decreased depressive symptomatology; higher task scores predicted decreased overall distress, depressive symptomatology, symptoms of re-experiencing, and avoidance; and higher bond scores predicted decreased depressive symptomatology and symptoms of re-experiencing.

Conclusions—These results suggest that assessments of therapeutic alliance should be incorporated into routine clinical care, and therapeutic alliance should be specifically cultivated in interventions to maximize psychotherapeutic benefits involving vulnerable populations such as cancer survivors.

Correspondence: A.J. Applebaum, Ph.D., Department of Psychiatry and Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, 641 Lexington Avenue, 7th Floor, New York, NY, 10022. Tel: (646) 888-0043; Fax: (212) 888-2584; applebaa@mskcc.org.

Keywords

therapeutic alliance; cancer; telephone administered CBT; PTSD

Therapeutic alliance is an established reliable predictor of successful therapy across patient populations and treatment modalities (e.g., Horvath & Symonds, 1991), including cognitive and behavioral (Waddington, 2002) and short-term dynamic (Crits-Christoph & Connolly, 1999) therapies. Benefits of a strong therapeutic alliance occur in face-to-face therapy, as well as therapies delivered over the phone or via the Internet (e.g., Cook & Doyle, 2004; Klein et al., 2009; Knaevelsrud & Maercker, 2007).

Despite increasing use of various psychotherapies to improve cancer patients' quality of life (e.g., Baik & Adams, 2011), studies of therapeutic alliance in therapies used with this population are limited (for a review, see Schnur & Montgomery, 2010). The present study evaluated the role of therapeutic alliance in telephone-administered cognitive-behavioral therapy (T-CBT) for the treatment of posttraumatic stress disorder (PTSD) symptoms in hematopoietic stem cell transplantation (HSCT) survivors. PTSD is experienced by a substantial proportion of HSCT survivors (Mosher et al., 2009), and often involves feelings of detachment from others, which may impede the ability to form a solid therapeutic alliance. The randomized trial (Duhamel et al., 2010) found that, compared to survivors in an assessment-only control group, those who completed T-CBT reported fewer illness-related PTSD symptoms, including less avoidance and fewer intrusive thoughts, as well as less general distress and fewer depressive symptoms. These benefits were maintained over a 12 month follow-up period. The present study examined the role of therapeutic alliance in these outcomes. We hypothesized that survivors who completed T-CBT would have greater decreases in PTSD symptoms, depressive symptoms, and general distress if they had high rather than low therapeutic alliance.

Method

Participants

Participants had HSCT 1–3 years prior to enrollment, were 18 years old, fluent in English, and had significant distress as measured by one of the following: (1) probable illness-related PTSD on the PTSD Checklist-Civilian Version (PCL-C); (2) subclinical PTSD symptoms as indicated by scores 1 standard deviation above the PCL-C mean; or (3) general distress with some PTSD symptoms, indicated by scores exceeding the clinical cutoff on any two subscales of the Brief Symptom Inventory (BSI; Derogatis, 1993) or the BSI Global Severity Index, with PCL-C scores exceeding the cutoff for at least one PTSD symptom cluster. Participants were excluded if they were waiting for transplant, receiving treatment for disease relapse, had active psychosis, severe cognitive impairment, substance dependence, or reported suicidal ideation.

Measures

Background Information—Sociodemographic and medical data were gathered via self-report and chart review.

General distress and depressive symptoms often co-occur with PTSD (Stuber, Nader, Yasuda, Punoos, & Cohen, 1991). They were measured using the BSI (Derogatis, 1993), a well-validated 53-item self-report measure. The Global Severity Index (GSI) and the depression subscale were used in this study.

Illness-related PTSD symptoms were assessed with the well-validated PCL-C (DuHamel et al., 2004; Weathers et al., 1993), a 17-item self-report measure that yields a total score and four subscale scores for re-experiencing, avoiding, numbing and hyperarousal. The parent trial (DuHamel et al., 2010) found significant changes due to T-CBT for re-experiencing and avoiding, and therefore analyses in the current study examined these two subscales.

Therapeutic alliance was assessed with the Working Alliance Inventory Short Form (WAI-S; Horvath & Greenberg, 1989), a valid, brief version of the original 36-item measure that consists of 12 items, with four items assessing each of three (task, bond, goal) subscales.

Procedure

Participants were recruited from Memorial Sloan-Kettering Cancer Center, Mount Sinai Medical Center, and Hackensack University Medical Center. Potential participants provided verbal consent and completed a screening interview over the phone. Eligible participants completed a baseline phone interview that included a PTSD diagnostic interview and measures of PTSD, general distress, and depressive symptoms. Participants were then randomized to either assessment only or T-CBT (10 sessions of a manualized intervention, delivered over 10–16 weeks), which included education about HSCT or illness-related PTSD, self-monitoring and alteration of maladaptive beliefs, guided exposure to cues associated with PTSD symptoms, enhancement of social support through communication skills, and relaxation training. (For a more detailed description, see DuHamel et al., 2010.) Therapeutic alliance was assessed after the third T-CBT session (Tracey & Kokotovic, 1989). PTSD, general distress, and depressive symptoms were re-assessed in follow-up phone interviews at 6, 9 and 12 months after the baseline assessment.

Statistical Analysis

A linear mixed model was used to evaluate the relation between therapeutic alliance (the WAI-S overall score, as well as the task, bond, and goal subscales) and general distress (the BSI-GSI), depressive symptoms (the BSI depression subscale), and PTSD symptoms (the PCL-C re-experiencing and avoiding subscales). Mean comparisons were Tukey adjusted for multiple comparisons.

Results

Of the 408 survivors assessed, 81 met study eligibility and 46 were randomized and completed T-CBT, the follow-up assessments and the assessment of therapeutic alliance. Their demographic characteristics are shown in Table 1. Most participants were male ($n = 28$, 60.9%), White ($n = 38$, 82.6%), and married or cohabitating ($n = 37$, 80.4%). Most had been diagnosed with multiple myeloma or amyloidosis (n = 18, 39%) or acute or chronic myeloid leukemia ($n = 10$, 21.7%). Participants had undergone HSCT an average of 2.6 years prior to this study.

Descriptive statistics for the WAI are presented in Table 2. As shown, average scores on all domains were high and close to the maximum possible score for the measure.

Linear mixed model results are presented in Tables 3 and 4. These analyses examined changes in outcomes that occurred after the baseline assessment. (Changes between screening and baseline cannot be attributed to the intervention or the therapeutic relationship.)

General distress and therapeutic alliance

The overall model examining the interaction between time of assessment and WAI-Task scores on general distress was marginally significant. However, general distress decreased significantly between baseline ($M = 46.51$) and the 6-month ($M = 27.16$) and 12-month ($M = 12.65$) assessments for participants with high WAI-Task scores. General distress decreased significantly between baseline ($M = 42.0$) and the 9-month assessment ($M = 26.78$) for participants with low WAI-Task scores.

Depressive symptoms and therapeutic alliance

The overall model examining the interaction between time of assessment and WAI Total scores on depressive symptoms was marginally significant. However, there were significant decreases in depressive symptoms between baseline ($M = 4.70$) and the 6- ($M = 2.73$), 9- ($M = 3.29$) and 12-month assessments ($M = 2.64$) for participants with high WAI Total scores. Depressive symptoms decreased significantly between baseline ($M = 5.06$) and the 9-month assessment ($M = 2.51$) for participants with low WAI Total scores. There was also a significant interaction between time of assessment and WAI Task scores. For participants with high WAI Task scores, depressive symptoms decreased between baseline ($M = 6.01$) and the 6- ($M = 2.61$), 9- ($M = 3.49$), and 12-month assessments ($M = 2.38$). Finally, there was a significant interaction between time of assessment and WAI Bond scores. For participants with high WAI Bond scores, depressive symptoms decreased significantly between baseline ($M = 6.01$) and the 6- ($M = 2.73$) 9- ($M = 3.46$), and 12-month assessments ($M = 2.70$). For participants with low WAI Bond scores, there was a significant decrease in depressive symptoms between baseline ($M = 4.77$) and the 9-month assessment ($M = 2.29$). Notably, participants with lower WAI Bond scores had much higher initial depressive symptoms ($M = 7.07$) than participants with high WAI Bond scores ($M = 4.72$).

PTSD symptoms and therapeutic alliance

There was a significant interaction between time of assessment and WAI Task scores on re-experiencing. Participants with high WAI Task scores had a significant decrease in re-experiencing between baseline ($M = 10.16$) and the 6-month assessment ($M = 8.27$). There was also a significant interaction between time of assessment and WAI Bond scores on re-experiencing. Participants with high WAI Bond scores had a significant decrease in re-experiencing between baseline ($M = 9.64$), the 6- ($M = 7.93$) and the 12-month assessment ($M = 6.61$). Finally, there was a significant interaction between time of assessment and WAI Task scores on avoiding. Participants with low WAI Task scores had significant decreases in avoiding between baseline ($M = 3.36$) and the 12-month assessment ($M = 2.62$).

Discussion

To our knowledge, this is the first study to demonstrate a strong therapeutic alliance in telephone-administered CBT for the treatment of PTSD among cancer survivors. This finding adds to the growing body of literature indicating that a therapeutic alliance may be established in telephone and Internet-based therapies (e.g., Cook & Doyle, 2002; Knaevesrud & Maerker, 2007). Although the advantages and disadvantages of such therapies have been debated, recent studies consistently report that the benefits conferred by in-person treatment can be derived via alternative media (e.g., Andrews, Davies, & Titov, 2011; Kilfedder et al., 2010).

Average ratings of alliance were high despite participants' posttraumatic symptoms and the challenging nature of our exposure-based treatment. In light of the challenges of retaining such medically ill patients in face-to-face therapy (Applebaum et al., 2011), the ability to create a therapeutic alliance in T-CBT is a particularly important finding. HSCT patients

often experience debilitating physical symptoms as a result of their disease and/or treatment and may find it challenging to travel to and from treatment centers and to attend psychotherapy visits in addition to medical appointments. These are the same patients for whom psychotherapy is of particular importance because of their well-documented psychological adjustment problems—including PTSD symptoms (e.g., Mosher et al., 2009).

Global distress and therapeutic alliance—Participants who agreed with their therapists about the tasks needed to accomplish the goals of the intervention had significant decreases in the intensity of their overall stress levels earlier than those who were less aligned with their therapist about these tasks. CBT is very task-oriented, and sessions and homework assignments are often devoted to teaching and practicing specific skills (i.e., how to restructure a maladaptive thought). A useful avenue for future research would be to investigate whether participants with high WAI-Task scores are more likely to engage actively in in-session exercises and to complete homework assignments, and whether they believe more strongly in the utility of these activities.

Depressive symptoms and therapeutic alliance—Significant decreases in depressive symptoms over the course of the intervention and follow-up period occurred earlier for participants with high therapeutic alliance. High overall alliance indicates that participants were aligned with their therapists on the goals of the intervention and agreed with them about tasks needed to accomplish these goals, in addition to having positive feelings about their relationship. Any or all of these components may have contributed to the observed improvement in depressive symptoms. For instance, they may have maximized the benefits of in-session and assigned homework in cognitive restructuring, exposure, and communication. Initial higher depressive symptoms among participants with low WAI-Bond scores may have hindered development of a therapeutic alliance, potentially explaining the delayed decrease in depressive symptoms among these survivors. They may have been less able to engage in the therapeutic relationship, more pessimistic about achieving future-oriented therapy outcomes, and less aligned with their therapist's future-oriented goals, all of which may have translated into lower perceived alliance.

PTSD symptoms and therapeutic alliance—There was a significant reduction in PTSD symptoms over the course of the intervention and follow-up period. Completion of tasks such as systematic desensitization and exposure are key therapeutic elements that help mitigate the re-experiencing of traumatic events. Active completion of these tasks, both in session and via homework, may partially explain why participants with high WAI-Task scores had significant decreases in these symptoms whereas those with low WAI-Task scores did not. Additionally, participants with high WAI-Bond scores had significant decreases in re-experiencing between baseline and the 6- and 12-month assessments. They may have felt a greater sense of trust in their therapists than participants with low WAI-Bond scores, which may have facilitated completion of anxiety-provoking tasks such as exposure to feared stimuli. Indeed, there is evidence that a strong therapeutic alliance may motivate patients to engage in treatment-related activities (e.g., Treasure et al., 1999).

Limitations

Several limitations of this study should be acknowledged. Although there is evidence that assessments of alliance early in therapy are the best indicators of final outcome (e.g., Horvath, 1981), the WAI was not re-administered after the third session, and thus we lack information regarding the stability of participants' ratings or the impact of changes in alliance on outcomes. This information would have allowed us to speak to the stability of alliance over time in telephone-administered CBT. Additionally, the small size of this study's sample, as well as the under-representation of ethnic minorities and exclusion of

those who lacked English fluency, limits our findings' generalizability. However, there is evidence that this sample's racial/ethnic composition is reflective of the population of HSCT recipients (e.g., Joshua et al., 2010; Rini et al., 2011), and economically disadvantaged patients may be underrepresented in HSCT populations because they may lack the financial resources evaluated during the pre-transplant screening process (Hamadani, Craig, Awan, & Devine, 2010). Regardless of these findings, however, future studies should attempt to enroll more diverse samples. Finally, it has been suggested that in CBT, the WAI subscales may tap into a general alliance factor as opposed to unique task, bond, and goal factors (e.g., Tracey & Kokotovic, 1989). Although the WAI is currently the "gold standard" measure of alliance, when interpreting the results of this study it is important to bear in mind the limitations of the measure, as well as the state of the science of research on the therapeutic alliance.

Conclusions

This study underscores the potential to establish a strong therapeutic alliance early in telephone-administered CBT for HSCT survivors and the beneficial role played by alliance in clinically significant decreases in general distress, and symptoms of depression and PTSD. These results emphasize the capacity of therapeutic modalities other than face-to-face therapy to engender a strong therapeutic alliance, and suggest that all aspects of the alliance—task, bond, and goal—are critical to successful therapeutic outcomes for HSCT survivors. They also support a more flexible application of traditional psychotherapeutic interventions for medically ill patients with distress who may be too ill to travel to treatment centers for face-to-face therapy, and for patients who may be avoidant of treatment centers due to their PTSD symptoms. Future studies are needed to provide additional support for use of telephone and Internet-based therapies with patients with a variety of cancer diagnoses (i.e., type, stage). Further, evaluations of the alliance should eventually be incorporated into routine clinical care to maximize the benefits of psychotherapy, particularly for such vulnerable populations as HSCT survivors.

Acknowledgments

References

Andrews G, Davies M, Titov N. Effectiveness randomized controlled trial of face to face versus Internet cognitive behaviour therapy for social phobia. Australian and New Zealand Journal of Psychiatry. 2011; 45:337–340. [PubMed: 21323490]

Applebaum A, Lichtenthal W, Pessin H, Radomski J, Rosenfeld B, Breitbart B. Factors associated with attrition from a randomized controlled trial of Meaning-Centered Group Psychotherapy for patients with advanced cancer. PsychoOncology. 2011 Epub ahead of print.

Baik OM, Adams KB. Improving the well-being of couples facing cancer: a review of couples-based psychosocial interventions. Journal of Marital and Family Therapy. 2011; 37:250–266. [PubMed: 21457288]

Cook JE, Doyle C. Working alliance in online therapy as compared to face-to-face therapy: Preliminary Results. Cyberpsychology, Behavior, and Networking. 2004; 5:95–105.

Crits-Christoph P, Connolly MB. Alliance and technique in short-term dynamic therapy. Clinical Psychology Review. 1999; 19:687–704. [PubMed: 10421952]

Derogatis, KR. Brief Symptom Inventory: Administration, Scoring, and Procedures Manual. 3. Minneapolis, MN: National Computer Systems, Inc; 1993.

DuHamel KN, Mosher CE, Winkel G, Labay LE, Rini C, Meschian YM, Redd WH. Randomized clinical trial of telephone-administered cognitive-behavioral therapy to reduce post-traumatic stress

disorder and distress symptoms after hematopoietic stem-cell transplantation. Journal of Clinical Oncology. 2010; 28:3754–3761. [PubMed: 20625129]

DuHamel KN, Ostroff J, Ashman T, Winkel G, Mundy EA, Keane TM, Redd W. Construct validity of the posttraumatic stress disorder checklist in cancer survivors: analyses based on two samples. Psychological Assessment. 2004; 16:255–266. [PubMed: 15456381]

Hamadani M, Craig M, Awan FT, Devine SM. How we approach patient evaluation for hematopoietic stem cell transplantation. Bone Marrow Transplantation. 2010; 45:1259–1268. [PubMed: 20479713]

Horvath, AO. Unpublished doctoral dissertation thesis. Vancouver, Canada: 1981. An exploratory study of the working alliance: It measurement and relationship to outcome.

Horvath AO, Greenberg LS. Development and validation of the Working Alliance Inventory. Journal of Counseling Psychology. 1989; 36:223–233.

Horvath AO, Symonds BD. Relation between working alliance and outcome in psychotherapy: A meta-analysis. Journal of Counseling Psychology. 1991; 38:139–149.

Joshua TV, Rizzo JD, Zhang MJ, Hari PN, Kurian S, Pasquini M, Majhail NS, Horowitz MM. Access to hematopoietic stem cell transplantation: Effect of race and sex. Cancer. 2010; 116:3469–3476. [PubMed: 20564154]

Klein B, Mitchell J, Gilson K, Shandley K, Austin D, Kiropoulos L, Cannard G. A therapist-assisted Internet-based CBT intervention for posttraumatic stress disorder: Preliminary results. Cognitive Behavioral Therapy. 2009; 38:121–131.

Kilfedder C, Power K, Karatzias T, McCafferty A, Niven K, Chouliara Z, Galloway L, Sharp S. A randomized trial of face-to-face counseling versus telephone counseling versus bibliotherapy for occupational stress. Psychology and Psychotherapy. 2010; 83:223–242. [PubMed: 19843354]

Knaevelsrud C, Maercker A. Internet-based treatment for PTSD reduces distress and facilitates the development of a strong therapeutic alliance: A randomized controlled clinical trial. BMC Psychiatry. 2007; 7:13. [PubMed: 17442125]

Mosher CE, Redd WH, Rini CM, Burkhalter JE, DuHamel KN. Physical, psychological, and social sequelae following hematopoietic stem cell transplantation: a review of the literature. Psychooncology. 2009; 18:113–127. [PubMed: 18677717]

Schnur J, Montgomery G. A systematic review of therapeutic alliance, group cohesion, empathy and goal consensus/collaboration in psychotherapeutic interventions in cancer: Uncommon factors? Clinical Psychology Review. 2010; 30:238–247. [PubMed: 20006414]

Stuber ML, Nader K, Yasuda P, Punoos RS, Cohen S. Stress responses after pediatric bone marrow transplantation: preliminary results of a prospective longitudinal study. Journal of the American Academy of Child and Adolescent Psychiatry. 1991; 30:952–959. [PubMed: 1757445]

Tracey TJ, Kokotovic AM. The factor structure of the working alliance inventory in cognitive-behavioral therapy. Journal of Psychotherapy Practice and Research. 1989; 1:207–210.

Treasure JL, Katzman M, Schmidt U, Troop N, Todd G, de Silva P. Engagement and outcome in the treatment of bulimia nervosa: first phase of a sequential design comparing motivation enhancement therapy and cognitive behavioral therapy. Behavior Research and Therapy. 1999; 37:405–418.

Waddington L. The therapy relationship in cognitive therapy: A review. Behavioral and Cognitive Psychotherapy. 2002; 30:179–192.

Weathers, FW.; Litz, BT.; Herman, DS.; Huska, J.; Keane, T. The PTSD checklist (PCL): Reliability, validity, and diagnostic utility. Presented at the International Society for Traumatic Stress Studies; San Antonia, TX. October 24–27, 1993; 1993.

Table 1

Sociodemographic and Clinical Characteristics of Study Participants (N = 47)

	Number of Participants	**%**
Sex		
Male	28	60.9
Female	18	39.1
Ethnicity		
African American	2	4.4
White	38	82.6
Hispanic	3	6.5
Other	3	6.5
Marital Status		
Married or equivalent	37	80.4
Divorced	1	2.2
Other	8	17.4
Education		
High school or less	8	17.4
Some college	8	17.4
College/graduate degree	30	65.2
Income		
Less than 19,999	5	10.9
20,000–39,999	2	4.4
40,000–59,999	7	15.2
60,000–79,999	6	13.0
Greater than 80,000	25	54.3
Missing	1	2.2
Disease status		
Free of disease	25	54.3
Alive with disease	13	28.3
Missing	8	17.4
Transplantation type		
Autologous	27	58.7
Allogenic	17	37.0
Missing	2	4.3
GVHD		
Chronic GVHD	2	4.4
History of acute GVHD	3	6.6
Hospitalization after discharge, months		
0	17	37.0
1–2	15	32.6
3–4	6	13.0
4+	1	2.2

	Number of Participants	%
Missing	7	15.2
Disease type		
Non-Hodgkin's lymphoma	7	15.2
Hodgkin's lymphoma	3	6.5
Acute and chronic myeloid leukemia	10	21.7
Myelodysplastic syndrome or myeloproliferative disease	5	11.0
Multiple myeloma or amyloidosis	18	39.1
Missing	3	6.5

	Mean	Standard Deviation	Range
Age, years	52.33	10.6	27–71
Time since transplantation, years	22.62	7.03	13–36

*
Note. GVHD (graft-versus-host disease).

Table 2

Descriptive Statistics for the Working Alliance Inventory – Short Form

	Mean	Standard Deviation	Range
WAI Total Score	72.54	9.64	42 – 84
WAI Task Subscale	24.07	3.70	10 – 28
WAI Bond Subscale	24.73	3.41	12 – 28
WAI Goal Subscale	23.6	3.75	15 – 28

Table 3

Interaction of WAI and time on BSI scores between baseline and follow-up assessments

Measure	*F*	*t*	*P* value
BSI-GSI*WAI Task	2.12		.0962
High WAI Task			
Baseline and 6 months		3.86	.0036
Baseline and 9 months		3.18	.0225
Baseline and 12 months		5.31	.0001
Low WAI Task			
Baseline and 6 months		2.38	.1437
Baseline and 9 months		3.66	.0064
Baseline and 12 months		2.55	.0996
BSI-DEP*WAI Total	2.24		.0850
High WAI Total			
Baseline and 6 months		4.12	.0019
Baseline and 9 months		3.52	.0100
Baseline and 12 months		3.60	.0081
Low WAI Total			
Baseline and 6 months		2.18	.2120
Baseline and 9 months		3.91	.0035
Baseline and 12 months		2.13	.2306
BSI-DEP*WAI Task	5.11		.0021
High WAI Task			
Baseline and 6 months		4.40	.0007
Baseline and 9 months		3.12	.0262
Baseline and 12 months		4.40	.0007
Low WAI Task			
Baseline and 6 months		1.06	.8245
Baseline and 9 months		2.71	.0709
Baseline and 12 months		0.81	.9253
BSI-DEP*WAI Bond	5.09		.0024
High WAI Bond			
Baseline and 6 months		4.02	.0026
Baseline and 9 months		3.18	.0243
Baseline and 12 months		3.45	.0015
Low WAI Bond			
Baseline and 6 months		1.90	.3340
Baseline and 9 months		4.24	.0013
Baseline and 12 months		1.80	.3913

Table 4

Interaction of WAI and time on PCLC scores between baseline and follow-up assessments

Measure	*F*	*t*	*P* value
PCLC-RE			
Time*WAI Task	3.31		.0201
High WAI Task			
Baseline and 6 months		3.77	0.0048
Baseline and 9 months		2.58	0.0955
Baseline and 12 months		2.55	0.1007
Low WAI Task			
Baseline and 6 months		1.10	0.8062
Baseline and 9 months		0.92	0.8870
Baseline and 12 months		1.33	0.6769
PCL-C-RE *WAI Bond	2.88		.0371
High WAI Bond			
Baseline and 6 months		4.18	.0017
Baseline and 9 months		2.27	.1779
Baseline and 12 months		3.31	.0176
Low WAI Bond			
Baseline and 6 months		1.72	.4439
Baseline and 9 months		1.03	.8408
Baseline and 12 months		2.65	.0835
PCL-C-AVOID*WAI Task	3.39		.0181
High WAI Task			
Baseline and 6 months		1.40	.6288
Baseline and 9 months		1.72	.4334
Baseline and 12 months		2.77	.0623
Low WAI Task			
Baseline and 6 months		2.14	.2248
Baseline and 9 months		2.78	.0612
Baseline and 12 months		3.07	.0305