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“Engage” Therapy: Prediction of Change of Late-Life Major Depression

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Abstract

Objective—Engage grew out of the need for streamlined psychotherapies that can be accurately used by community therapists in late-life depression. Engage was based on the view that dysfunction of reward networks is the principal mechanism mediating depressive symptoms. Accordingly, Engage uses “reward exposure” (exposure to meaningful activities) and assumes that repeated activation of reward networks will normalize these systems. This study examined whether change in a behavioral activation scale, an index of reward system function, predicts change in depressive symptomatology.

Methods—The participants (N=48) were older adults with major depression treated with 9 weekly sessions of Engage and assessed 27 weeks after treatment. Depression was assessed with the 24-item Hamilton Depression Rating Scale (HAM-D) and behavioral activation with the four subscales of Behavioral Activation for Depression Scale (activation, avoidance/rumination, work impairment, social impairment) at baseline, 6 weeks (mid-treatment), 9 weeks (end of treatment), and 36 weeks.

Results—Change only in the Activation subscale during successive periods of assessment predicted depression severity (HAM-D) at the end of each period ($F_{1,47}=21.05$, $p<0.0001$). An increase of one standard deviation in the Activation score resulted in a 2.04 (95% CI: 1.17–2.92) point decrease in HAM-D. For every one point increase in the Activation score, HAM-D was decreased by 0.22 points (95% CI: 0.12–0.31).

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Conflicts of Interest

No other authors report conflicts of interest.

Limitations—No comparison group. Partial overlap of Activation Subscale with HAM-D, lack of detailed neurocognitive assessment and social support.

Conclusion—Change in behavioral activation predicts improvement of depressive symptoms and signs in depressed older adults treated with Engage.

INTRODUCTION

Engage is a behavioral intervention for late-life depression that grew out of the need for streamlined therapies that can be accurately used by community therapists in the treatment of late-life depression. A recent IOM report expressed concern about the underutilization and complexity of behavioral interventions and recommends that psychotherapy research should seek to “identify the key elements that lead to improved health outcomes”. (England & Butler, 2015). Engage is a response to this recommendation. The theory on which Engage was built implicates a dysfunction of reward networks as the principal mechanism mediating depressive symptoms (Alexopoulos & Arean, 2014). This view is supported by extensive clinical and biological findings (Pizzagalli et al., 2009; Robinson, Cools, Carlisi, Sahakian, & Drevets, 2012; Russo & Nestler, 2013; Takahashi et al., 2008). Late-life biological changes (e.g. vascular lesions, reduced perfusion, degenerative changes, abnormal inflammatory and neuroendocrine responses) may serve as etiological factors of reward network dysfunction either directly or by compromising frontolimbic circuitry that interacts with the reward networks (Alexopoulos, 2005; Alexopoulos & Arean, 2014). Stress further contributes to this cascade of events by promoting inflammation and production of free radicals, influencing dendritic remodeling, inhibiting neurogenesis, and altering functional connectivity. Regardless of causation, we have argued that reward network dysfunction is the most proximal mechanism to depressive symptoms (Alexopoulos & Arean, 2014).

Based on the centrality of reward network dysfunction in late-life depression, Engage uses “reward exposure” as its principal therapeutic element (Alexopoulos & Arean, 2014). “Reward exposure” consists of repeated exposure to meaningful and rewarding social or physical activities and assumes that repeated activation of reward networks will retrain and normalize the function of these systems. Engage also recognizes that other behavioral manifestations may interfere with reward exposure, in particular negativity bias, apathy, and emotional dysregulation are common in late-life depression and originate from dysfunction of the negative valence network, arousal network, and cognitive control networks respectively. Accordingly, Engage uses a stepped approach and offers interventions targeting these behavioral abnormalities, if in the course of treatment they appear to prevent patients from using “reward exposure”. Preliminary studies suggest that Engage is non-inferior to problem solving therapy in reducing depressive symptoms and signs (Alexopoulos et al., 2015) of late-life depression.

An indirect way to examine whether Engage activates the reward system is to assess behaviors related to this system during Engage therapy. The Behavioral Activation for Depression Scale (BADs) is an instrument that may capture behavioral changes related to “reward exposure” (Jonathan W Kanter, Mulick, Busch, Berlin, & Martell, 2007). The BADs consists of four subscales that target sets of behavior related to interventions offered

by behavioral activation therapies. The Activation subscale consists of 7 items related to the degree of engagement in activities. The Avoidance/Rumination subscale consists of 8 items related to negative thoughts and to avoidance of unpleasant situations. The School/Work subscale consists of 5 items related to failure to fulfill work, school, and or chores responsibilities. Finally, the Social Impairment subscale consists of 5 items related to failure to engage in social functions.

BADS was generated through exploratory factor analysis of a rationally derived set of items, followed by a confirmatory factor analysis (Jonathan W Kanter et al., 2007; Manos, Kanter, & Busch, 2010). This factor structure was replicated in community samples with elevated depressive symptoms (Jonathan W Kanter, Rusch, Busch, & Sedivy, 2009; Raes, Hoes, Van Gucht, Kanter, & Hermans, 2010) and in depressed outpatients. (Fuhr, Hautzinger, Krisch, Berking, & Ebert, 2016; Teismann, Ertle, Furka, Willutzki, & Hoyer, 2015). Adequate reliability and validity were reported for the BADS in all the above studies, with BADS scores showing predicted associations with depressive symptoms. The BADS has good psychometric properties, evidence of construct validity of the total scale and subscales, and adequate fit of the data to the factors structure in various populations (Fuhr et al., 2016; Jonathan W Kanter et al., 2007; Jonathan W Kanter et al., 2009; Manos et al., 2010; Raes et al., 2010), as well as evidence of convergent validity with concurrent measures of depressive symptoms, rumination, flexibility, and avoidant behavior (Fuhr et al., 2016; Raes et al., 2010).

An earlier analysis showed that the BADS total score mediates improvement of late-life depression during treatment with Engage and at follow-up (Alexopoulos et al., 2016). The current analysis examines the role of BADS subscales in predicting the reduction of depressive symptomatology during the 9 weeks of Engage therapy and 27 weeks after termination of treatment. We hypothesized that increase in the BADS Activation subscale scores predict reduction of depression during Engage since this therapy encourages and structures rewarding activities meaningful to individual patients.

METHODS

Participants

Older adults (> 60 years) were recruited by the Weill Cornell Institute of Geriatric Psychiatry and the University of California San Francisco by advertisement for an open treatment trial of Engage therapy. The Institutional Review Boards of both institutions approved the research procedures. The inclusion criteria were: 1) Unipolar, non-psychotic major depression (by DSM-IV and SCID(First, 1995)); 2) Mini-Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975) ≥ 24 ; 3) off antidepressants or on a stable dose of an antidepressant for 12 weeks or longer and no plan to change the dose in the next 10 weeks; and 5) capacity to consent. Individuals were excluded if they: 1) had a plan or intent to attempt suicide in the near future; 2) history or presence of psychiatric diagnoses other than major depression or generalized anxiety disorder; 3) use of psychotropic drugs or cholinesterase inhibitors other than mild doses of benzodiazepines.

Systematic Assessment

All instruments were administered by trained interviewers. Diagnosis and age at the onset of the first depressive episode was assigned in research conferences by agreement of two clinician investigators after review of a narrative of the subjects' psychiatric history, the SCID-R, and other rating scales. Medical burden was assessed with the Charlson Comorbidity Index (Charlson, Pompei, Ales, & MacKenzie, 1987). Disability was quantified by the interviewer-administered World Health Organization Disability Assessment Schedule II-12 item (WHODAS) (Epping-Jordan & Ustun, 2000). Overall cognitive impairment was rated with the Mini Mental State Examination (MMSE).

The 24-item Hamilton Depression Rating Scale (HAM-D) was used to assess depression severity at baseline, 6, 9, and 36 weeks (Hamilton, 1960). Behavioral activation was rated at the same times with the Behavioral Activation for Depression Scale (BADs) (Jonathan W Kanter et al., 2007). The BADs consists of 25 items each of which is rated on a scale of 0 to 6. However, one of the items (Item 22: My work/schoolwork suffered because I was not as active as I needed to be) was not relevant to most of our depressed older adults. For this reason, we used 24 out of the 25 items of the BADs. The BADs Activation subscale appears to best covers the target behaviors of "reward exposure" offered by Engage consists of the following 7 items: I am content with the amount and types of things I did; I engaged in a wide and diverse array of activities; I made good decisions about the types of activities and/or situations I put myself in; I was an active person and accomplished the goals I set out to do; I did things even though they were hard because they fit in with my long-term goals for myself; I did something that was hard to do but it was worth it. The items of the rest of BADs subscales may be found in the Appendix.

Engage

Engage is a stepped therapy consisting of 9 sessions of 40–45 minute duration (see Manual in Appendix). "Reward exposure" is offered during each Engage sessions. To this end, therapists work with patients to develop a list of goals related to rewarding activities. In each session, patients select two or three activities meaningful to them, develop a list of ideas on how to pursue each, select the most feasible among these ideas, and make plans with concrete steps to overcome barriers to plan implementation. In patients who do not adequately pursue planned rewarding activities during the initial three sessions, therapists attempt to identify "barriers" to reward exposure in three domains, i.e. negativity bias, apathy, or inadequate emotional regulation. A similar review of barriers to reward exposure occurs at the sixth week of treatment.

Therapists add interventions for negativity bias, apathy, and/or inadequate emotional regulation only when these behavioral complexes impede the pursuit of activities planned during "reward exposure". Strategies for negativity bias include playing devil's advocate for thoughts interfering with engagement, weighing the evidence to motivate patients to pursue activities, practicing using a positive focus related to reward engagement, writing alternative positive explanations to negative thoughts interfering with engagement in rewarding activities, and learning how positive people would respond. Interventions for apathy consist of prompts such as reminders, labels, checklists, tape recorders, electronic instructions to

start tasks, calls to prompt action plans, and family and friends to assist in plans and initiation. Strategies for inadequate emotional regulation consist of meditation, imagery distraction, relaxation exercises, deep breathing, and distraction. Patients practice the selected strategy in session and then on their own, so that they can use it when they sense difficulties while pursuing plans for reward exposure.

Therapist Certification

The therapists were six social workers (MSW) practicing in the community and seven (4 MSW and 3 Ph.D.) members of the research team. The therapists studied the Engage Manual and two trainers (PA or PR) offered two 45-minute didactic sessions. Then, each therapist had one-to-one role-play sessions with a trainer in which a trainer first role-played, and after change of roles, assessed each trainee's fidelity to Engage with the Engage Adherence Scale (E-AS). Therapists were certified if they achieved E-AS scores ≥ 4 (good) on two consecutive sessions with "practice cases" of patients with major depression.

Data Analysis

At baseline, correlation between each BADS sub-scale and HAM-D were analyzed and tested using Pearson's correlation coefficient. We used mixed-effects linear regression analyses (Laird & Ware, 1982) to analyze the progression of HAM-D and BADS with a subject-specific random intercept and fixed effects for time. To control for potential confounders, exploratory analysis entered patient demographics and baseline rating scale scores as a covariates in each model. Years of education was the only variable of the model found to approximate significance in its relationship with depression (HAM-D) and was included as a covariate in each of the mixed-effects models. We examined the longitudinal association of each BADS subscale and HAM-D using mixed effects models in which change in each BADS subscale between assessment periods predicted change in severity of depression (HAM-D) during the same periods. To study whether change in individual BADS subscales predict improvement of depression severity, we constructed mixed effects models in which change in each BADS subscale between assessment periods predicts the severity of depression (HAM-D) at the end of each period. In order to evaluate the relative effect of each BADS sub-scale on HAM-D scores, these analyses were repeated after re-scaling the BADS subscales in standard deviation units. All analyses were based on an intent-to-treat principle. The mixed model methodology we employed, provides unbiased estimates under two general missing data mechanisms, missing completely at random and missing at random. Bonferroni's method was used to adjust p-values to control for multiple comparisons for each subscale. All tests were conducted at an $\alpha=0.05$. We conducted all analysis using R statistical software.

RESULTS

Forty-eight older adults with major depression met selection criteria (Table 1). No participant met DSM-IV criteria for dementia and their MMSE scores were above the dementia range (> 24). Participant demographic and clinical characteristics and attrition rate have been reported elsewhere (Alexopoulos et al., 2016). Briefly, their depression and

disability (WHODAS II mean: 29.1, SD: 8.1) were of mild to moderate severity and they had a wide range of medical burden (Charlson Comorbidity Index mean: 2.6, SD: 2.1).

At baseline, behavioral activation scores were correlated with severity of depression. The BADS subscales of Avoidance/Rumination ($r = 0.471$, 95% CI [0.213, 0.668], $t = 3.583$, $df = 45$, $p = 0.0008$), Work/School Impairment ($r = 0.461$, 95% CI [0.2, 0.66], $t = 3.481$, $df = 45$, $p = 0.0011$), and Social Impairment ($r = 0.425$, 95% CI [0.157, 0.635], $t = 3.150$, $df = 45$, $p = 0.0029$) were directly correlated with HAM-D. The Activation BADS subscale was inversely correlated with HAM-D, but this correlation did not reach significance ($r = -0.172$, 95% CI [-0.438, 0.121], $t = -1.173$, $df = 45$, $p = 0.2468$).

All participants had 9 sessions of Engage and all received “reward exposure”, the principal therapeutic ingredient of Engage. Of the 48 participants, 21 required no additional interventions as “reward exposure” was deemed by the therapists adequate. Fourteen participants received additional interventions for negativity bias, 9 required additional interventions for apathy, and 4 required additional interventions for emotional dysregulation in order to engage in reward exposure activities. There were no significant differences in the trajectory of depression severity (HAM-D) among participants who received “reward exposure” alone and those who required additional interventions (time $\times$ reward exposure interaction: $F_{3,84}=0.79$, $p=0.50$).

Mixed-effects linear regression models using a subject-specific random intercept, with fixed effects for time and education showed that depression and each of the BADS subscales changed significantly during treatment with Engage and during follow-up (Figure 1). Depression (HAM-D) sharply declined during the 9 weeks of Engage treatment by 10 points (95% CI: 7.36–11.77) and increased mildly by 4.8 points (95% CI 1.55–8.04) during the follow-up phase. The Activation subscale had a sharp increase during the 9 weeks of Engage treatment and a mild decline during follow up. The Avoidance/Rumination, Work/School Impairment, and Social Impairment BADS subscales paralleled the course of depression.

Next, we examined if change in each subscale score of behavioral activation between assessment points was associated with change in severity of depression during the same time. To this end, we constructed mixed effects models in which change in each BADS subscale between assessment periods (from baseline to week 6, week 6 to week 9, and week 9 to week 36) correlated with change in severity of depression (HAM-D) in the same periods (Table 2). Only change in the Activation and Avoidance / Rumination BADS subscales were significantly associated with change in HAM-D. For every one point increase in the BADS Activation subscale, there was a decrease of 0.31 points in HAM-D. A one point increase in the BADS Avoidance/Rumination subscale predicted an increase of 0.14 points in HAM-D. After standardization of the BADS subscales score, one standard deviation increase in the Activation sub-scale had the largest improvement in HAM-D by 2.87 points (95% CI 1.72–4.01) followed by Avoidance/Rumination sub-scale, which increased HAM-D by 1.35 points (95% CI 0.18–2.53).

Finally, we examined whether change in each BADS subscale scores predict change in severity of depression during the same time. To this end, we used a series of mixed effects

models to examine whether change in each BADS subscale between assessment periods (i.e. from baseline to week 6, from week 6 to week 9, and from week 9 to week 36) predicts the severity of depression (HAM-D) at the end of each period (i.e. at week 6, 9, and 36, respectively). Change in the Activation BADS subscale was the only significant predictor of HAM-D (Table 3). An increase of one standard deviation in the BADS Activation score resulted in a 2.04 (95% CI 1.17–2.92) point decrease in HAM-D. For every one point increase in the BADS Activation score, HAM-D was decreased by 0.22 points (95% CI 0.12–0.31).

DISCUSSION

The principal finding of this study is that change in the BADS Activation subscale, but not other BADS subscales was associated with the efficacy of Engage in reducing symptoms and signs of late-life depression. The BADS Activation subscale focuses on the number and diversity of patients' activities, on their ability to remain active even when they find activities difficult to pursue, and on feelings of accomplishment and contentment from their activities. These are exactly the targets of “reward exposure”, the fundamental intervention of Engage, which consists of concrete and detailed planning of meaningful, rewarding activities.

The selection of “reward exposure” as the principal intervention of Engage originates from the view that positive valence system's dysfunction is a fundamental abnormality in late-life depression. This view is supported by animal and human studies. Triggers of depression influence the structure and function of reward-related circuitry mediating depression-like behaviors in animals (Russo & Nestler, 2013). In a reward valuation paradigm, depressed patients made impulsive and inconsistent choices in tasks of gain and loss (Takahashi et al., 2008). Depressive symptoms are accompanied by deficits in reward-based decisions and high variability in action selection (Kunisato et al., 2012). Probes of the reward system led to attenuated responses of the nucleus accumbens, the caudate, and other anterior ventral striatum structures in depressed patients (Pizzagalli et al., 2009; Robinson et al., 2012). Aging impairs reward processing and influences the flexibility of adaptation to changes in reward contingencies (Eppinger, Hammerer, & Li, 2011).

Engage requires that its neurobiologically identified behavioral targets be addressed with interventions of known efficacy. “Reward exposure” as administered by Engage is similar to the basic component of behavioral activation, a time tested, empirically-validated therapy of depression (Chambless et al., 1998; Ekers et al., 2014) with some evidence of efficacy in depressed older adults (Moss, Scogin, Di Napoli, & Presnell, 2012; Snarski et al., 2011). Behavioral activation was based on Lewinsohn's concept of depression as a result of low rates of response-contingent positive reinforcement. The original treatment of Lewinsohn et al (Peter M Lewinsohn, 1974; P. M. Lewinsohn & Libet, 1972) encouraged activity scheduling to address deficits in positive reinforcement and training in social skills required in order to obtain and maintain reinforcement. It included, however, additional interventions such as contingency management to increase session attendance and thought stopping to target covert verbal behavior. Later versions of behavioral activation added a variety of interventions (J. W. Kanter et al., 2010). However, a recent meta-analysis of 26 randomized

controlled trials, including 1,524 subjects, found no association between the complexity of behavioral intervention types and outcome of depression (Ekers et al., 2014).

“Reward exposure” is a pared down intervention helping patients to develop and pursue concrete plans for meaningful to them activities with reward value. In this sense, it is similar to Lewinsohn’s and Jacobson’s basic behavioral activation interventions (Peter M Lewinsohn, 1974) (Jacobson, Martell, & Dimidjian, 2001). However, “reward exposure” is stripped from the additional components of behavioral activation so that it can be accessible to most depressed older patients and taught to large numbers of community clinicians who struggle with multicomponent interventions that do not offer explicit directions for treatment personalization. As was noted in a qualitative study of therapists trained in problem solving therapy, once trained, clinicians prefer to focus on therapeutic elements that are relevant for a given patient and feel constrained by a fixed therapeutic structure (Crabb, Arean, & Hegel, 2012). Further, Engage uses a structured personalized stepped approach and offers interventions for negativity bias, apathy and/or inadequate emotional regulation only when they interfere with the pursuit of rewarding activities. Thus, the prediction of depression improvement by the BADS Activation subscale, and not by other BADS subscales, supports the centrality of exposure to meaningful, rewarding activities.

The relationship of change in the BADS Activation subscale with improvement of late-life depression is consistent with brain imaging findings related to behavioral activation. Behavioral activation therapy decreased activation in prefrontal cortices (paracingulate gyrus, right orbital, right frontal pole) in response to cognitive control stimuli presented within a sad context (Dichter, Felder, & Smoski, 2010). The extent of pretreatment paracingulate gyrus activation predicted the degree of change in depressive symptomatology during behavioral activation therapy (Dichter et al., 2009). Further, behavioral activation therapy resulted in functional changes in structures that mediate responses to rewards. Specifically, behavioral activation therapy was followed by activation changes in the paracingulate gyrus during reward selection, the right caudate nucleus during reward anticipation, and the paracingulate and orbital frontal gyri during reward feedback (Dichter et al., 2009; Dichter et al., 2010). Response of major depression to behavioral activation was predicted by pretreatment connectivity of the right insula with the right middle temporal gyrus and the left intraparietal sulcus with the orbital frontal cortex (Crowther et al., 2015).

This study has several limitations. First, there was no comparison group treated with another therapy. Therefore, it is unclear whether the relationship of change in the BADS Activation subscale and severity of depression is specifically related to Engage. However, increased exposure to rewarding context is a common final pathway of most effective psychotherapies for depression. Therefore, lack of specificity in the relationship of BADS Activation subscale change to depression may not have compromised the significance of this study’s finding. Second, it is possible that both the BADS Activation subscale and the HAM-D scale measure the same construct. While some overlap exists, the activation subscale explained only 10.9% of the variance in depressive symptomatology in depressed outpatients (Fuhr et al., 2016). Finally, the assessment battery did not include detailed assessment of neurocognitive functions and social support, each of which might have influenced both behavioral activation and the efficacy of Engage.

The prediction of depressive symptomatology by change in the BADS Activation subscale supports the view that “reward exposure” increases behaviors influenced by the positive valence system (NIMH, 2011). However, the BADS Activation subscale is a self-report of rather complex, albeit clinically meaningful, behaviors. Nonetheless, our observation provides the impetus for examining other domains of function, including performance in paradigms eliciting positive valence system responses as well as functional neuroimaging and electrophysiology indices. Such studies may identify specific positive valence system functions that mediate the effect of “reward exposure” on late-life depression. Such knowledge can be used to refine the neurobiological model of late-life depression and lead to simpler and sharply targeted behavioral interventions.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- Engage therapy is a streamlined behavioral intervention that matches the skill set of community therapists
- “Reward exposure”, the principal therapeutic element of Engage, aims to reactivate the function of reward systems assumed to be impaired during depression.
- Increase in an activation scale, a behavioral index of reward systems function, mediated change in late life major depression during Engage therapy and during follow up.

Figure 1. Changes in the 24-item HAM-D and the BADS sub-scales in 48 non-demented older adults with major depression treated with Engage (nine weekly sessions) and assessed over 36 weeks.

Table 1

Baseline Scores of Depression and Behavioral Activation in 48 Older Adults Treated with Engage Therapy Over 9 Weeks.

VARIABLE	Median	Mean	Standard Deviation
Female/Males N		32/16	
Age	71.4	71.7	8.2
Education (Years)	16.0	16.2	5.6
HAM-D *	22.0	22.8	4.0
MMSE **	29.0	28.8	1.2
BADS *** – Activation	17.0	16.5	9.6
BADS – Avoidance / Rumination	22.0	21.3	9.7
BADS – Work / School Impairment	14.0	13.2	7.2
BADS – Social Impairment	10.0	9.7	7.3
BADS Total Score	80.0	80.3	25.3

* Hamilton Depression Rating Scale-24 items

** Mini-Mental State Examination

*** Behavioral Activation for Depression Scale

Table 2

Longitudinal relationship of change in each BADS subscale scores between assessment periods (from baseline to week 6, week 6 to week 9, and week 9 to week 36) and change in severity of depression (HAM-D) in the equivalent periods

BADS Subscale	Coefficient (CL _L ,CL _U) [¶]	Standardized Coefficient (CL _L ,CL _U) [¶]	Mixed Effects F*	p
Activation	−0.31 (−0.43, −0.18)	−2.87 (−4.02, −1.72)	23.96	<.0001
Avoidance / Rumination	0.14 (0.02,0.26)	1.35 (0.18,2.53)	5.15	0.0279
Work/School Impairment	0.08 (−0.12,0.28)	0.49 (−0.71,1.69)	0.63	0.4320
Social Impairment	0.14 (−0.05,0.33)	0.84 (−0.31,2)	2.04	0.1596

* df (1, 47) for all models

[¶](CL_L,CL_U) = Lower and Upper limit of 95% Confidence Interval

Table 3

Relationship of change in BADS subscale scores between assessment periods (i.e. from baseline to week 6, from week 6 to week 9, and from week 9 to week 36) to severity of depression (HAM-D) at the end of each period (i.e. at week 6, 9, and 36, respectively).

BADS Subscales	Coefficient (CL _L ,CL _U) [¶]	Standardized Coefficient (CL _L ,CL _U) [¶]	Mixed Effects F*	p
Activation	-0.22 (-0.31,-0.12)	-2.04 (-2.92,-1.17)	21.05	0.0001
Avoidance/Rumination	0.09 (-0.01,0.18)	0.83 (-0.07,1.74)	3.28	0.0767
Work/School Impairment	-0.02 (-0.17,0.14)	-0.1 (-1.05,0.84)	0.04	0.8352
Social Impairment	0.04 (-0.11,0.19)	0.26 (-0.65,1.17)	0.31	0.5788

* df(1, 47) for all models.

[¶](CL_L,CL_U) = Lower and Upper limit of 95% Confidence Interval