



Research paper

“Engage” therapy: Prediction of change of late-life major depression



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A B S T R A C T

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 activations 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).

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.

1. 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 and 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 and Arean, 2014). This view is supported by extensive clinical and biological findings (Pizzagalli et al., 2009; Robinson et al., 2012; Russo and 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 and 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 and Arean, 2014).

Based on the centrality of reward network dysfunction in late-life depression, Engage uses “reward exposure” as its principal therapeutic element (Alexopoulos and Arean, 2014). “Reward exposure” consists of repeated exposure to meaningful and rewarding social or physical

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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 et al., 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 (Kanter et al., 2007; Manos et al., 2010). This factor structure was replicated in community samples with elevated depressive symptoms (Jonathan W Kanter et al., 2009; Raes et al., 2010) and in depressed outpatients (Fuhr et al., 2016; Teismann et al., 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; Kanter et al., 2007, 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.

2. Methods

2.1. 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 et al., 1995)); 2) Mini-Mental State Examination (MMSE) (Folstein et al., 1975) \geq 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.

2.2. 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 et al., 1987). Disability was quantified by the interviewer-administered World Health Organization Disability Assessment Schedule II-12 item (WHODAS) (Epping-Jordan and 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) (Kanter et al., 2007). The BADs consists of 25 items each of which is rated on a scale of 0–6. 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.

2.3. Engage

Engage is a stepped therapy consisting of 9 sessions of 40–45 min 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

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