

Measurements of Functioning as Possible Predictors of Encountering Barriers during a Novel
Psychotherapy for Older Adults with Major Depressive Disorder

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Abstract

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Purpose: To examine baseline measurements of functioning as possible predictors of encountering barriers in the novel psychotherapy, *Engage*.

Background: Depression has been shown to have a profound effect on three domains of functioning—global, psychological, and executive—that can be measured upon patient intake. Major depressive disorder in older adults, also known as late life depression (LLD), is widely underdiagnosed and undertreated. Even when patients are able to access treatment, they may still encounter barriers during therapy that can affect its effectiveness. The ability to predict the presence of cognitive and emotional barriers during treatment has the potential to provide clinicians with information that could personalize treatment for those suffering with LLD, resulting in better health outcomes.

Methods: This study was a secondary analysis of a sample of 35 older adults with major depressive disorder enrolled in *Engage*, a 9-week course of streamlined psychotherapy for LLD. We focused on three domains of functioning (global, psychological, and executive), which were

measured at baseline via the World Health Organization Disability Assessment Schedule (WHODAS), the Hamilton Depression Rating Scale (HDRS), and Stroop Color-Word task, respectively. We then used logistic regression models to conduct a preliminary investigation of whether these measurements of baseline functioning predicted encountering barriers during participation in *Engage*. Additionally, we also conducted a *post hoc* exploratory analysis of two other potential predictors of encountering barriers, the Behavioral Activation for Depression Scale (BADSD) and the General Efficacy Scale (GES). Univariate regression models that met a minimum p value ≤ 0.15 would be included in a multivariate model.

Results: Only one measurement of functioning (BADSD, $p = .13$) met criteria for multivariate model inclusion, but failed to show significant evidence of a predictive relationship on its own. The WHODAS ($\beta = 0.06$, $p=0.18$), HDRS ($\beta = 0.05$, $p=0.55$), and Stroop ($\beta = -0.04$, $p= 0.21$), failed to predict barriers in this analysis.

Conclusion: We were unable to detect an association between baseline measurements of functioning and encountering barriers during psychotherapy. However, given the utility of such a predictive measure in addressing barriers to treatment, further study with a larger sample size is needed. The ability to use a patient's baseline measurements of functioning to predict encountering cognitive and emotional barriers during psychotherapy could ultimately lead to better treatment outcomes via more timely recognition and intervention of barriers during psychotherapeutic treatment.

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Introduction

Depressive disorders, such as major depressive disorder, are characterized by of symptoms such as pervasive low mood, anhedonia, loss of energy, and diminished ability to concentrate (American Psychiatric Association, 2000). These episodic disorders can be chronic in occurrence and have the ability to profoundly affect one's daily functioning. The World Health Organization reports that depression is ranked as the single largest contributor to both global disability and suicide deaths (World Health Organization, 2017).

Estimates of the prevalence of depressive disorders in older adults, also known as late life depression (LLD), can vary widely depending on the study, usually ranging between 1 and 5% (Manetti et al., 2014). It has been extensively reported that in the United States, older adults have the lowest prevalence of major depressive episodes relative to other age groups, even when accounting for confounding factors such as low income levels (Fiske, Wetherell, & Gatz, 2009; Lee et al., 2016). However, these estimates are problematic due to consistent underreporting and underdiagnosis of depressive symptoms and disorders in older adults (Barry, Abou, Simen, & Gill, 2012). While the exact prevalence rates of LLD are somewhat contentious, it has been shown that depressive disorders tend to have a lasting effect on those who experience them, particularly those who are also suffering from co-morbid conditions.

LLD often affects patients who suffer from chronic medical illnesses and can exacerbate negative outcomes of many health conditions (Alexopoulos, 2005). Older adults who suffer from both a chronic medical condition and serious mental illness are more likely to experience poorer health outcomes than if they only had the chronic medical condition (Institute of Medicine, 2012). Previous research that assessed the health impact of depression and other chronic diseases

reported that those who had co-occurring depression and a chronic medical condition had worse self-reported health than those without the chronic condition (Moussavi et al., 2007).

One negative outcome of chronic illness, including depression, is disability that contributes to decreased functioning. Some studies have shown that lower physical functioning and multimorbidity are risk factors for increased depressive symptoms in older adults (Hsu, 2011, 2014). Increased depressive symptoms are also associated with subsequent increased disability (Hajek et al., 2017). Additionally, impaired cognitive functioning, including executive functioning, has been associated with LLD in multiple studies (Koenig, Bhalla, & Butters, 2014), some of which have shown a predictive relationship between impaired executive functioning and poor treatment response (Morimoto, Kanellopoulos, Manning, & Alexopoulos, 2015). Older adults with LLD tend to perform poorly on tests of executive functioning that measure skills necessary for activities of daily living such as verbal fluency, cognitive flexibility, planning, and cognitive inhibition (Morimoto et al., 2015).

These more recent findings are consistent with previously reported associations between LLD and decreased levels of physical functioning (Alexopoulos et al., 1996), LLD and impaired executive functioning (Lockwood, Alexopoulos, & Gorp, 2002), and an association between cognitive deficits and functional impairment (Vaughn McCall & Dunn, 2003). Evidently, executive functioning, physical functioning, and depression are interrelated and have the potential to exacerbate one another, resulting in complex cases of LLD. A more thorough assessment of these factors upon treatment admission could inform treatment decisions and may improve treatment outcomes in patients suffering with LLD.

Although effective treatments for LLD already exist, many factors contribute to the underutilization of such treatments. Prior studies have reported multiple barriers to access and

utilization of mental health services that further contribute to the undertreatment of older adults with LLD. Examples of such barriers include lowered recognition of depressive symptoms by physicians, adherence to social norms, ability to identify need for help, service availability, and cost (Ell, 2006; Mohr et al., 2010; Wuthrich & Frei, 2015).

In the event that a patient is able to access treatment for LLD, there are still barriers they may encounter that ultimately affect treatment outcomes, such as cognitive or emotional barriers. To our knowledge, there have yet to be any studies of predictors of encountering cognitive and emotional barriers during psychotherapy treatment. While these studies do not yet exist, there have been studies examining possible predictors of treatment outcomes in LLD.

Tunvirachaisakul et al (2018) recently analyzed 32 published studies involving treatment interventions such as case management, psychotherapy, and antidepressant medications, and described seven significant predictors of treatment outcomes. Amongst these predictive variables were baseline depression severity, current episode duration, physical illness, and executive functioning (Tunvirachaisakul et al., 2018). Still, the literature has yet to address these as predictors of encountering a barrier during psychotherapy treatment.

The present study explores barriers encountered in the context of the novel psychotherapy *Engage*. *Engage* is a stepped psychotherapy which uses re-engagement in meaningful and rewarding activities (“reward exposure”) as its principal intervention (Alexopoulos & Arean, 2014). Throughout nine weekly 45-minute sessions, patients are given the lowest effective dose of treatment (Step 1; reward exposure) and then, based on treatment progress, are either kept at this minimum level of intervention or progressed to a higher step (2 or 3; reward exposure plus addressing primary and secondary barriers). Difficulty experiencing reward exposure is measured by the patient’s ability to fully participate in the *Engage* treatment structure (i.e., able

to form and complete an action plan, and participation in rewarding activities) as well as an improvement in depressive symptoms per the 9-item version of the Patient Health Questionnaire (PHQ-9). Clinicians progress patients to higher steps when PHQ-9 scores indicate that the patient is not experiencing a decrease in symptoms.

Difficulty responding to reward exposure in LLD is postulated to be most likely due to the presence of at least one of three possible treatment barriers—negativity bias, apathy, or emotional dysregulation (Alexopoulos & Arean, 2014). The choice to address these specific barriers within the *Engage* psychotherapy was guided by neurobiological theories and constructs of LLD. Specifically, the theory that depression is the result of dysfunction in the positive valence system (Alexopoulos & Arean, 2014) which, according to the National Institute of Mental Health (2018), is “primarily responsible for responses to positive motivational situations or contexts, such as reward seeking...and reward/habit learning”. Thus, due to the manualized stepped-care format and standard treatment procedure of routinely assessing for treatment barriers, *Engage* provides a unique opportunity to explore baseline characteristics as possible predictors of encountering barriers during treatment. If shown to have a predictive relationship, such measurements of baseline characteristics could further assist clinicians in tailoring treatment at an earlier point.

In this study, we investigate whether certain patient characteristics predicted an increased likelihood of encountering a barrier during psychotherapeutic treatment for LLD. Identifying an association between a patient’s baseline physical and cognitive functioning and future barriers encountered during therapy could assist clinicians in personalizing a patient’s treatment based on their intake characteristics. In antidepressant treatment of patients with late life depression, predictors of treatment have been used to inform clinicians’ prescribing practices by taking into

account the probability of full treatment response (Alexopoulos, 2008). We apply a similar framework in this study (See Figure 1) and examine which patient baseline characteristics (e.g., functioning) are associated with a higher likelihood of encountering barriers during treatment. Specifically, we hypothesize that patients with lower baseline functioning were more likely to face a barrier during *Engage* psychotherapy treatment than their counterparts.

Method

To test this hypothesis, we conducted a cross-sectional analysis of secondary data using logistic regression models to explore whether baseline measurements of functioning and depression severity predicted patients' encountering of barriers over the course of nine weeks of *Engage* therapy. We conceptualized baseline functioning in three domains: global, psychological, and executive. Each domain of functioning was tested individually.

Pilot Study

The data were collected as part of a randomized pilot study conducted at the Weill Cornell Institute of Geriatric Psychiatry. All practitioners who administered the treatment were, at minimum, master's level clinicians (MSW, PhD, PsyD) who were trained and certified in the intervention. The pilot study obtained approval from the home institution's Institutional Review Board (IRB); the present study was exempt from IRB approval as it was not considered research with human participants.

Participants

The study criteria for the *Engage* pilot study included that participants were age ≥ 60 , English speaking, and diagnosed with major depressive disorder as determined by the Structured Clinical Interview for DSM-IV (SCID-IV). Two participants were included in the sample despite having a diagnosis of minor depression due to their Hamilton Depression Rating score

indicating clinically relevant depression of at least moderate severity (e.g. score > 18; Hamilton, 1960). Exclusion criteria included a diagnosis of dementia, presence of psychiatric diagnosis beyond major depressive disorder or generalized anxiety disorder, and those who were considered at high risk for suicide, thus necessitating more intensive treatment.

Data Collection and Measures

Trained staff assessed study participants at multiple time points before, during, and after nine weeks of treatment (Baseline, Week 6, Week 9, and Week 36). The present study used the *Engage* pilot baseline data regarding depression severity, depression chronicity, and physical and executive functioning. Patient demographics such as age, race, and gender were also collected. To identify participants who faced barriers, we reviewed clinician treatment notes to establish whether the patient required additional intervention steps above reward exposure (i.e., addressing negativity bias, apathy, and/or emotional dysregulation). Furthermore, we conducted a *post hoc* exploratory analysis of other baseline measurements of self-efficacy and behavioral activation as possible predictors of encountering barriers during *Engage* psychotherapy.

Barriers to reward exposure. Over the course of *Engage* treatment, clinicians routinely assess for three predetermined barriers: apathy, emotional dysregulation, and negativity bias. A barrier is likely present when a patient has difficulty experiencing pleasure from reward-driven activities. When a patient is experiencing one of these barriers, the clinician provides strategies prescribed to assist in overcoming each barrier specifically. The strategies vary depending on the barrier they are intended to address. For example, patients who encounter emotional dysregulation that interferes with their ability to engage in reward exposure are coached in mindfulness exercises to assist in coping with feelings of anxiety or distress that might impinge on their treatment progress. If the patient is still unable to engage in rewarding activities after

barrier intervention, the clinician reassesses for the presence of one of the two additional barriers. Once identified, similar to the first barrier, the clinician offers an intervention to guide the patient in overcoming the barrier.

Psychological functioning. The *Hamilton Depression Rating Scale* (HDRS; Hamilton, 1960) is a 24-item semi-structured interview consisting of questions that focus on symptoms of depression such as low mood, lowered ability to feel pleasure (anhedonia), and insomnia. The items are then totaled to a composite score (ranging 0 – 52) which is used to quantify depression severity; higher scores indicate more severe symptomatology (e.g. a score of 0 = *absent*, 1 = *mild*, 2 = *moderate*, etc.) The number of points allocated to each symptom varies (e.g. depressed mood has a possible range of 0-4, while insomnia ranges from 0-2). Patient scores are based on how their symptom presentation aligns with the assessment's predetermined standardized criteria. According to general HDRS scoring conventions, a score of 8 or greater would suggest the participant is experiencing clinically significant depressive symptoms, while a score of 18 or greater would indicate a moderate to severe level depressive symptoms.

The *Structured Clinical Interview for DSM-IV Axis I Disorders* (SCID-IV; First, Spitzer, Mirriam, & Williams, 2002) is a widely-used structured assessment that is designed to assist clinicians in diagnosing disorders according to the standardized criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000). In the *Engage* pilot study, the mood disorders subsection of the SCID-IV was administered to participants at baseline to assess the presence of major depressive disorder. In addition to guiding clinicians to a research diagnosis, the SCID-IV captures details regarding current and past depressive episodes such as number of past episodes, depression chronicity (length of current episode in months), and age of first depressive episode.

Global functioning. The *World Health Organization Disability Assessment Schedule* (WHODAS; Ustin, Kostanjsek, Chatterji, & Rehm, 2010) is a standardized measure of disability that has been found to be reliable and internally consistent. The assessment covers six major domains of functioning: cognition, mobility, self-care, getting along, life activities, and participation (Ustin, Kostanjsek, Chatterji, & Rehm, 2010). Each domain has corresponding questions that measure patient difficulty with tasks, such as bathing or concentrating. Each item is rated along a range of 1-5, each describing a different level of difficulty: no difficulty (1), mild difficulty (2), moderate difficulty (3), severe difficulty (4), and extreme difficulty (5). There are two versions of the WHODAS, a 36-item version, and an abbreviated 12-item version, both of which can be administered either by an interviewer, self-administered, or proxy-administered. The present study used the total WHODAS score from an interviewer-administered 12-item test. The overall amount of difficulty with daily tasks are represented in the WHODAS total score (adding all items) which can range from 12 (no disability) to 60 (full disability).

Executive functioning. The *Stroop Color-Word Test* (Stroop, 1935) is a widely-used neuropsychological test consisting of three tasks: the color task, the word task, and the Color-Word task. The first two tasks do not contain interfering stimuli (i.e. participants are asked to read words printed in black ink, or to name the color of the ink printed). The Color-Word task requires participants read from a list of the words “blue”, “red” and “green”. However, each of the 100 words in the Color-Word task is printed in a color text that is incongruent with the printed word (e.g. the word “blue” is printed in green ink) so as to measure one’s selective attention and impulsivity (Scarpina & Tagini, 2017) as a proxy of executive functioning. Our analyses only included data for the incongruent Color-Word task.

Functional MRI studies have shown the Stroop Color-Word test activates the anterior cingulate cortex (ACC), a region of the brain which is involved in tasks of executive functioning (Peterson et al., 1999) as well as in depressive disorders (Murrough et al., 2016). Furthermore, the ACC is theorized to be a major component in the neurological basis of the three predetermined barriers in *Engage* (apathy, emotional dysregulation, and negativity bias). The present study analyzed participants' raw Stroop Color-Word score, with higher scores indicating greater levels of selective attention, and thus executive functioning.

Exploratory predictors. Self-efficacy is defined as a person's perception of their ability to change their own behavior and sustain the change in the face of obstacles (Bandura, 1977). To measure this, we analyzed participant scores on the General Self-Efficacy Scale (GSE) (Sherer & Adams, 1983). The GSE is a self-report survey instrument (scores ranging from 10 – 40, with higher scores indicating higher self-efficacy), which measures one's expected ability to change behavior and sustain that change.

Behavioral activation (Martell, Addis, & Jacobson, 2001) is a behavioral psychotherapy that primarily focuses on the impact of activation and isolation behaviors on symptoms of depressive disorders. This theory posits depressive symptoms and isolating behaviors reinforce and perpetuate each other. Thus, activating behaviors are introduced to break this cycle and encourage healthy behaviors (Polenick & Flora, 2013). The Behavioral Activation for Depression Scale (BADSD; Kanter, Mulick, Busch, Berlin, & Martell, 2006) is a self-report survey instrument used to measure a patient's activation (i.e., participation in meaningful life activities) as well as avoidance and isolation (i.e., social withdrawal) behaviors over the course of treatment. Scoring ranges from 0 – 150, with lower scores indicating lower activation. In psychotherapies that utilize principles of behavioral activation (such as *Engage*), a measurement

of treatment response is increased client activation behavior alongside lowered avoidance behavior (e.g., staying in bed all day) in the form of treatment adherence (i.e., pleasant activity scheduling). Therefore, patients who present with low baseline activity engagement may also have difficulty participating in reward exposure treatment and thus may need increased clinical support in the form of barrier interventions. Conversely, patients with higher baseline self-efficacy may not require as intensive of coaching in order to experience treatment effects of reward exposure and activation without further intervention.

Statistical Analysis

To test the possible predictive factors of a participant's likelihood of encountering barriers during *Engage* therapy, we conducted multiple bivariate logistic regression analyses using the statistical software package R (R Core Team, 2013). Inspection of data for outliers indicated one data point that fell more than four standard deviations above the mean for the variable "number of past episodes." Thus, we chose to omit this data point from our analyses. We conducted preliminary screening of variables using bivariate logistic regression to determine which variables would fit best into a subsequent multivariate model. Due to the exploratory nature of this analysis, we chose to be generous with the cut off for determining statistical significance for inclusion in a multivariate model ($p \leq 0.15$). While this may result in less rigorous scientific findings, the benefits of extracting information, particularly with exploratory data analyses, are not without purpose or merit in such a preliminary investigation (Babyak, 2004). Possible research outcomes include applying findings towards generating and developing future research directions and hypotheses.

Results

Although the original pilot sample contained a total of 48 participants, the present analysis was restricted to participants who had complete data available regarding barriers encountered during treatment ($n = 35$). Participant demographics are summarized in Table 1. The sample consisted of participants ranging in age from 58 to 95 years, with a mean of 72.8 years and was predominantly female (65.7%), White (88.6%), and non-Hispanic (85.7%). The average baseline HDRS score ($M = 22.89$, $SD = 4.21$) indicated moderate depressive symptoms, while the average WHODAS total ($M = 28.43$, $SD = 8.19$) showed a mild level of disability. For executive functioning, the mean raw score of the Stroop Color-Word was 31.52 ($SD = 13.18$).

All participants included in the analysis received nine weeks (full dose) of *Engage* psychotherapy treatment. More than half (57.14%, $n = 20$) of the participants required barrier intervention during the course of treatment. Of those 20, eight were treated for apathy, two for emotional dysregulation, and 10 for negativity bias. A total of 15 participants did not encounter any of the three barriers and therefore did not require additional therapist intervention above reward exposure.

The data did not provide any evidence (see Table 2) that measurements of baseline physical (global) functioning, as captured by the WHODAS (OR=1.06, 95% CI: 0.96 - 1.17, $p = 0.18$), or of baseline executive functioning, as captured by the Stroop Color-Word test (OR= 0.96, 95% CI: 0.91 - 1.02, $p = 0.21$), predicted the likelihood of encountering barriers to treatment within this sample. Furthermore, none of the models examining measurements of depression characteristics, such as severity (OR= 1.02, 95% CI: 0.88 - 1.25, $p = 0.55$), number of past depressive episodes (OR= 0.902, 95% CI: 0.653 – 1.22, $p = 0.50$), or duration of current depressive episode (OR= 1.00, 95% CI: 0.99 - 1.0, $p = 0.67$), predicted encountering a barrier

during *Engage* treatment. Similarly, one of the two exploratory regression models, the GSE total (OR = 0.99, 95% CI: 0.87 – 1.14, $p = 0.93$), did not indicate any sort of predictive relationship in regards to encountering a barrier during engage treatment. Ultimately, only one variable met our criteria for follow-up model inclusion, the BADS total (OR= 0.98, 95% CI: 0.95 – 1.0, $p = 0.13$), which indicated a trend toward a possible relationship between higher activation levels and lower likelihood of encountering barriers. Since only one variable qualified, a second model was not computed.

Discussion

In this study we tested the hypothesis that baseline measurements of functioning (global, psychological, and executive) are associated with encountering barriers during treatment for depression using the novel psychotherapy *Engage*. Our analyses used data from the *Engage* pilot study with older adults with LLD. Ultimately, there was no support for this hypothesis; that is, all three measurements of functioning failed to be significant predictors of encountering barriers during *Engage*.

Given this lack of support for our initial hypothesis, we also ran *post hoc* exploratory analyses of baseline self-efficacy and behavioral activation as potential predictors of barriers. While these characteristics have yet to be explored as possible predictors of encountering barriers during depression treatment, they may indeed be associated with functioning and mental health. Previous studies have shown high self-efficacy scores are positively correlated with physical and mental health as well as functioning (Grembowski et al., 1993). However, our analysis did not find any evidence of a relationship between baseline self-efficacy and encountering barriers during *Engage*.

As previously discussed, the three barriers addressed in *Engage* are implicated in LLD as a result of positive valence system dysfunction. Since neurobiological theories of behavioral activation are central to *Engage*, we analyzed patient levels of activation via the BADS as a proxy for functioning of the positive valence system (Alexopoulos et al., 2016). Thus, we hypothesized that a participant who is experiencing difficulty participating in reward exposure (as indicated by the presence of barriers and theoretically due to dysfunction in the brain's positive valence systems) is likely to also have a low BADS score. Our preliminary analysis confirmed a negative relationship between behavioral activation and subsequently encountering barriers. However, this relationship only narrowly met our criteria for inclusion in a follow-up multivariate model and was the only variable to do so. Behavioral activation may be a proxy for engagement and readiness to change during treatment for depression; therefore, more research is needed to further explore this association.

This study had multiple limitations. First, the pilot study had a modest sample size to begin with, and after accounting for missing data, the present study was only able to analyze a portion of the pilot's participants, which resulted in an even smaller sample size. This small sample yielded low statistical power which may not have been sufficient to detect an association. Second, due to the circumstances in which the data were collected, the sample was limited to participants of a restricted geographical area who had the resources to attend regular therapy sessions in addition to study assessments over the course of nine weeks. Additionally, the sample was rather homogenous and consisted mainly of non-Hispanic White and highly educated participants. These factors must all be considered when determining how generalizable the study findings may be.

Finally, this study relied on secondary data collected for a study that was not designed to explore the present hypothesis. As such, data from the pilot study were limited to include measurements of functioning that were chosen congruent to the outcomes of study, which was not to explore possible predictors of encountering barriers during *Engage*. The present study would have benefitted from multiple measurements of each of the three domains of functioning in order to measure these complex concepts more thoroughly. For example, the Stroop Color-Word test, while validated and widely used, measures a particular aspect of executive functioning (i.e., impulsivity and selective attention). However, executive functioning is a multifaceted ability that encompasses a variety of neuropsychological phenomena that are not captured by the Stroop Color-Word test yet may still play a role in depression, overall functioning, and engagement in psychotherapy.

Despite its limitations, this study has highlighted an interesting research opportunity in the development and delivery of mental health services for older adults with LLD. *Engage* is an example of how psychotherapy can be tailored to meet the specific needs of the intended target population, as well as the needs of each individual patient, with the hope of ultimately leading to better health outcomes. Published analysis of the *Engage* pilot data showed that within this sample, barriers were reported and addressed in approximately 57 % of cases, and overall patient symptoms of depression (HDRS score) were significantly lowered over the course of *Engage* treatment (Alexopoulos et al., 2016). Thus, there is reason to believe that addressing barriers during treatment could be important to treatment outcomes. A thorough understanding of possible predictors of encountering barriers may lead to more timely recognition and intervention of barriers during psychotherapeutic treatment, but it is also worth noting the possibility that they may not be associated with treatment outcomes at all. Further research is necessary to delineate

any relationship, or lack thereof, between patient functioning, barriers during treatment, and treatment outcomes in LLD as this information could ultimately act as guidance for clinicians as they work with this underserved population.

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Tables and Figures

Table 1

Sample Demographics

<u>Continuous Demographic</u>	<u>Mean (SD)</u>	<u>Range</u>
Age, in years	72.80 (8.46)	58 - 95
Education, in years	15.23 (2.57)	10 - 20
Current Episode Duration, in months	28.91(44.23)	1 - 180
Number of past episodes	3.13 (2.45)	1 - 10
HDRS, total score	22.89 (4.21)	16 - 36
Stroop Color-Word, raw score	31.52 (13.18)	7 - 60
WHODAS, total score	28.43 (8.19)	14 - 47
BADS, total score	86.44 (25.29)	43 - 132
GSE, total score	28.31 (4.81)	19 - 37
<u>Categorical Demographic</u>	<u>N (%)</u>	
Race		
White	31 (88.6%)	
Non-White	4 (11.4%)	
Ethnicity		
Hispanic	5 (14.3%)	
Non-Hispanic	30 (85.7%)	
Gender		
Female	23 (65.7%)	
Male	12 (34.3%)	

SCID Diagnosis

MDD, Recurrent, Moderate	21 (61.8%)
MDD, Recurrent, Unspecified	1 (2.9%)
MDD, Single Episode, Mild	1 (2.9%)
MDD, Single Episode, Moderate	9 (26.5%)
Minor Depression	2 (5.9%)

Reward Exposure Alone 15 (43%)

Received Barrier Intervention 20 (57%)

Apathy	8 (40%)
Emotional Dysregulation	2 (10%)
Negativity Bias	10 (50%)

Table 2
Bivariate Logistic Regression Results

<u>Predictor Variable</u>	<u>Coefficient</u>	<u>SE</u>	<u>p</u>	<u>OR</u>	<u>CI [95%]</u>
WHODAS total	0.06	0.05	0.18	1.06	0.96 – 1.17
Stroop Color-Word	- 0.04	0.03	0.21	0.96	0.91 – 1.02
HDRS	0.05	0.09	0.55	1.05	0.88 – 1.25
SCID Number of Past Episodes	- 0.10	0.15	0.50	0.90	0.65 – 1.22
SCID Episode Duration	- 0.003	0.001	0.68	1.00	0.99 – 1.00
BADS total	- 0.02	0.015	0.13	0.98	0.95 - 1.0
GSE total	- 0.006	0.07	0.93	.99	0.87 – 1.14

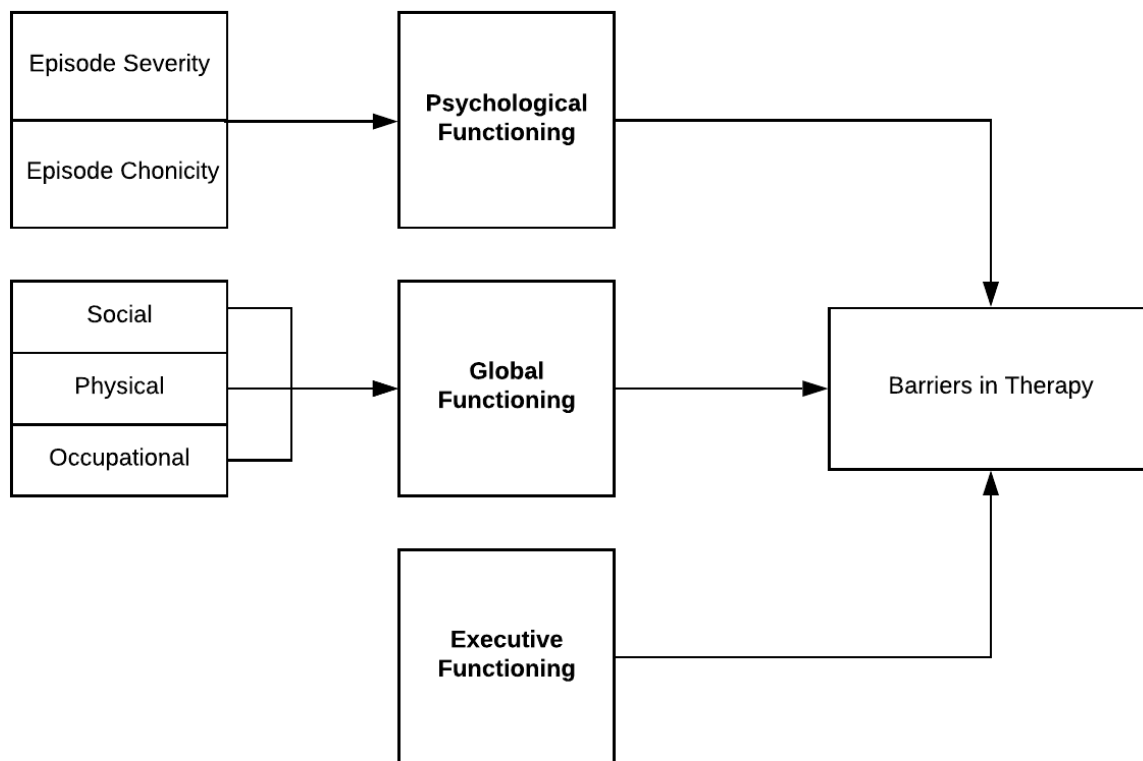


Figure 1. Conceptual model.