Behavioral Activation for Major Depression in Adolescents: Results From a Pilot Study

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This study evaluated the treatment effects of Behavioral Activation (BA) on adolescents with major depressive disorder (MDD). A total of 28 adolescents (M age = 15.43) participated in this 18-week study. Semi-structured diagnostic interviews were used to determine depression status. Multiple informant methods (participants, parents, therapists, independent assessors) evaluated clinical change. Assessments were conducted at baseline, midpoint, end of treatment, and 3- and 6-month follow-ups. Results suggested that BA was an effective treatment for depressed adolescents. At the end of treatment, 90.9% of completers no longer met criteria for MDD, with 54.5% classified as fully remitted, 36.4% classified as responders, and only 9.1% classified as nonresponders. Follow-up assessments indicated that treatment effects were sustained. Conclusions and future directions are discussed.

Key words: adolescents, behavioral activation, depression, treatment. [Clin Psychol Sci Pract 23: 39–57, 2016]
are less likely to earn college degrees and are more likely to report lower incomes as adults, become unwed parents, develop substance abuse problems, and report experiencing stressful events in their lives (Klein, Torpey, & Bufferd, 2008; Lewinsohn & Clarke, 1999; Zisook et al., 2007). Thus, there is a pressing need for evidence-based treatments for depressed adolescents.

Meta-analytic studies have shown that several psychosocial treatments for depressed adults are efficacious, including cognitive behavior therapy (CBT), interpersonal therapy (IPT), supportive therapy, social skills training, and problem-solving therapy (Cuijpers, van Straten, Andersson, & van Oppen, 2008). Most of these treatments have been adapted for younger samples, and both CBT and IPT are now considered well-established treatments for youth (David-Ferdon & Kaslow, 2008).

Less attention, however, has been paid to purely behavioral treatments for depressed youth, despite a growing theoretical and empirical basis suggesting that such treatments may prove a worthy addition to the armamentarium of treatments for this population. The primary adaptation of CBT for children and adolescents, for example, employs a greater focus on concrete examples and behavioral strategies with a comparatively lesser emphasis on abstract concepts and cognitive restructuring (Brent & Poling, 1997; Curry et al., 2005; March et al., 2004). Additionally, more straightforward behavioral approaches may represent a better neurodevelopmental fit for youth: The prefrontal cortex, which is associated with abstract thinking and the coordination of thoughts and behaviors, does not reach full maturity until the early twenties (Giedd, 2004).

In adult samples, behavioral interventions alone may be equally efficacious in comparison to CBT interventions. Jacobson et al. (1996) conducted a dismantling study in which they evaluated whether the full CBT protocol (Beck, Rush, Shaw, & Emery, 1979), as compared to the behavioral or cognitive restructuring components alone, was necessary to effectively treat depression. Three important conclusions emerged from this work: (a) the behavioral components of CBT were as effective as the full treatment; (b) the behavioral treatment alone was equally effective as the cognitive treatment at altering distorted thinking (i.e., the putative mechanism of change in CBT); and (c) the effects of the behavioral treatment were equally sustainable as those of the full CBT package.

Behavioral Activation (BA) is now considered a well-studied and highly efficacious treatment for depressed adults. BA has been shown to be comparable in effectiveness to antidepressant medication in mild to moderate depression (Jacobson, Martell, & Dimidjian, 2001) and has outperformed cognitive therapy among severely depressed adults (Dimidjian et al., 2006). In addition to the aforementioned benefits of BA over CBT, meta-analyses (Mazzucchelli, Kane, & Rees, 2009) and review articles (e.g., Sturmey, 2009) have demonstrated that BA (a) produces effect sizes that are equal to CBT at post-treatment and follow-up assessments; (b) has lower attrition rates than CBT; and (c) may be more effective than CBT for clients who suffer from chronic and/or severe depression.

Although some adaptations of the adult treatment have been reported, little empirical evidence exists in support of BA with adolescents. Van Voorhees et al. (2009) adapted BA for delivery via the Internet; however, their program was intended for the prevention rather than the treatment of depression. Chu, Colognori, Weissman, and Bannon (2009) reported promising results from a pilot study in which they adapted BA for use with youth with comorbid anxiety and depression. Their adaptation includes a group-based treatment that is delivered in school settings; however, their trial was small, and the adaptation has not yet been rigorously tested. In our preliminary work (Ritschel, Ramirez, Jones, & Craighead, 2011), we adapted BA for depressed adolescents and found promising results across 18 weeks of treatment. Scores on parent- and youth-rated measures of depression showed significant improvement, and post-treatment diagnostic interviews revealed that four of six participants no longer met criteria for depression. In addition, participants showed significant improvements on the Children’s Hope Scale (Snyder et al., 1997), which serves as an index of psychological well-being. As Dimidjian, Barrera, Martell, Muñoz, and Lewinsohn (2011) note, the principles of BA appear to make it a viable treatment for numerous other populations, including adolescents; however, considerably more
work needs to be done to evaluate the effectiveness of BA for depressed youth.

**Behavioral Activation Approach to Treatment**

BA is a brief, solution-focused intervention based on the theory that depression results from inadequate levels of positive environmental reinforcement (Dimidjian, Martell, Addis, & Herman-Dunn, 2008). More specifically, depressed individuals tend to engage in avoidant behavioral patterns that result in few opportunities for extrinsic reward. Therefore, the primary goal of BA is to modify the contextual factors that maintain or exacerbate depressive symptoms (Coffman, Martell, Dimidjian, Gallop, & Hollon, 2007). Therapists and clients work collaboratively to establish tasks and activities that decrease avoidant behaviors and increase opportunities for positive reinforcement (Dimidjian et al., 2008; Martell, Addis, & Jacobson, 2001).

The adult BA protocol (Dimidjian et al., 2008) is a short-term therapy (i.e., approximately 24 sessions over 16 weeks) comprising five general phases of treatment: orientation; development of treatment goals; individualizing targets for activation and engagement; application and modification of activation strategies; and review of the behavioral changes and gains made during treatment. In a previous publication, we described in detail how we adapted the BA protocol for adolescents (Ritschel et al., 2011). Four primary adaptations were made in converting the adult manual into an adolescent manual. First, we created numerous age-appropriate handouts and activity sheets to help adolescents understand depression, to illustrate the lessons that are taught throughout treatment, and to explain how BA intervenes on depressive symptoms. Second, we systematically incorporated parents into treatment at the beginning, middle, and end of the 18-week protocol. These sessions were used to provide psychoeducation about depression and the BA approach to treatment, to help set goals and evaluate progress toward goals over time, and to discuss relapse prevention or referral options at the end of treatment. Third, we expanded the treatment window from 16 to 18 weeks, and within the 18-week window we allowed adolescents four extra sessions to use in whatever way they wanted (e.g., to have an extra parent session, to include a significant other, or if the teen was feeling particularly depressed or suicidal). We selected this window because we modeled a considerable amount of the study methodology after the Treatment for Adolescents with Depression Study (TADS; March et al., 2004), which is usually considered the gold standard treatment trial for this population. Fourth, we created six phases of treatment with an approximate number of sessions allotted for each phase as a way to make the treatment easier to understand and track for both parents and teens.

The purpose of the present study was to evaluate further the feasibility and potential efficacy of our adapted BA manual in reducing symptoms of depression and increasing psychological well-being among a larger sample of adolescents with MDD throughout active treatment and 3- and 6-month follow-up. Our primary goal was to evaluate changes in depression over the course of treatment using data from multiple informants (e.g., parents, clinicians, participants, and independent assessors). Our secondary goal was to evaluate whether baseline levels of activation and session attendance were associated with improvements in depression over time. Because there is a compelling trend in psychology and psychiatry to move toward more personalized treatment approaches that match patients to treatments based on individual characteristics (see Dunlop et al., 2012; Mayberg, 2003), we were interested in evaluating these secondary goals as a preliminary step in identifying whether certain patient characteristics and behaviors measured at baseline (i.e., activation levels) or over the course of treatment (i.e., attendance) might be predictive of outcomes. To inform these hypotheses, we consulted two relevant areas of the literature. First, some researchers (e.g., Cheavens, Strunk, Lazarus, & Goldstein, 2012) have suggested that patients may be better matched to treatments based on whether the treatment either (a) complements their existing strengths (the capitalization model); or (b) helps remediate skills deficits (the compensation model). Based on the behavioral changes reported by Dimidjian et al. (2006) in severely depressed (and, therefore, deactivated) patients, we hypothesized that BA would likely be more beneficial to patients who showed lower levels of activation at baseline (i.e., the compensation model). In terms of session attendance, previous studies with depressed adolescents (e.g., Brent
et al., 2008; Kennard et al., 2009) have found that patients who attend a greater number of sessions show greater improvements in depression scores over time; thus, we hypothesized that greater session attendance in BA would be associated with lower depression scores at post-treatment.

Taken together, we hypothesized that (a) depression scores would improve over the course of treatment based on reports from adolescents, parents, clinicians, and independent assessors; (b) adolescents who were less activated initially would demonstrate a stronger response to treatment; and (c) higher numbers of sessions attended would be associated with greater improvements on all measures of depression. As an exploratory aim, we were also interested in assessing the extent to which participants and their parents liked and were satisfied with the treatment; there were no specific hypotheses associated with this aim.

METHOD
Participants
This study included 28 adolescents (age range: 14–17) who met criteria for MDD as a primary diagnosis based on the Kiddie Schedule for Affective Disorders (K-SADS) and who had raw scores of 45 or higher (i.e., >65th percentile) on the Children’s Depression Rating Scale–Revised (CDRS-R). Inclusion and exclusion criteria were modeled after the Treatment for Adolescents with Depression Study (TADS; March et al., 2004); participants were excluded based on the following criteria: currently taking psychotropic medications except for psychostimulants used to treat comorbid attention-deficit hyperactivity disorder (ADHD) current or past diagnosis of bipolar disorder, psychotic-spectrum disorder, or pervasive developmental disorder; current diagnosis of conduct disorder, life-threatening anorexia, obsessive-compulsive disorder, or autism; alcohol or drug dependence or abuse within the last 3 months (excluding nicotine or caffeine); or estimated full-scale IQ below 80.

Sample Characteristics
Of the 65 adolescents who completed the comprehensive diagnostic intake interview, 28 were eligible for study participation, and 22 completed the study (see Figure 1). Demographic information, relevant clinical characteristics, and baseline assessment scores are presented in Table 1. The majority of participants were female, and the sample was ethnically diverse. Overall, 53.6% of participants (n = 15) met criteria for a secondary DSM-IV diagnosis; specifically, 32.1% (n = 9) met criteria for one additional diagnosis, 14.3% (n = 4) met criteria for two additional diagnoses, and 7.1% (n = 2) met criteria for three additional diagnoses; specific additional diagnoses are presented in Table 1. Independent samples t-tests and correlations were conducted to assess whether scores on baseline measures differed as a function of demographic traits (e.g., age, gender, comorbidity status). Participants did not differ on any baseline measures based on their gender, age, or whether they met criteria for MDD only as compared to MDD plus additional DSM-IV diagnoses.

Measures
All measures used in this study are well validated for use with adolescents, with one exception. We chose to include the Behavioral Activation for Depression Scale (BADS; Kanter, Mulick, Busch, Berlin, & Martell, 2007), which has not been validated in adolescent samples, because no other scale exists that captures the elements of depression targeted in BA. Timing of assessments and interviews over the course of the study is presented in Table 2.

Reliability of Measures
Reliability assessments were conducted to ensure diagnostic consistency on all interview-based measures. Study assessors videotaped all clinical interviews, and 30% of the interviews from each assessment at each time point were randomly selected and rated by a second assessor to ascertain inter-rater reliability. Intraclass correlation coefficients (ICCs) were calculated using methods articulated by Shrout and Fleiss (1979).

Measures Administered by Study Assessors. The Kiddie Schedule for Affective Disorders (K-SADS; Kaufman et al., 1997) is a semi-structured interview that assesses present and lifetime Axis I diagnoses in youth; information is obtained from both teens and parents. Initial studies demonstrated excellent inter-rater reliability (93–100%) and excellent 2-week test–retest reliability (κ = 0.77–1.00) for major depression, bipolar
disorder, generalized anxiety disorders, and externalizing disorders. Inter-rater reliability for the K-SADS in this study was excellent ($\kappa = 0.88$).

The Longitudinal Interval Follow-Up Evaluation–Adolescent version (A-LIFE; Keller et al., 1987) is a semi-structured interview that assesses psychiatric symptoms, treatments, and functional outcomes in the time period that has elapsed since the previous assessment. The A-LIFE allows the assessor to choose which Axis I diagnoses will be assessed, thereby allowing for the same thorough evaluation provided by instruments such as the K-SADS but with specifically selected diagnoses. As such, the A-LIFE allows for a significantly truncated and focused assessment that is designed to follow up on only the diagnostic categories of interest (i.e., for the present study, only MDD was assessed with the A-LIFE). In addition, symptoms are tracked on a weekly basis over a specified period of time, which allows for the evaluation of relapse during a study that includes a follow-up assessment. The A-LIFE has demonstrated excellent inter-rater reliability (ICCs $>0.90$). Inter-rater reliability for the A-LIFE in the present study was excellent ($\kappa = 0.90$).

The Wechsler Intelligence Scale for Children, 4th edition (WISC-IV; Wechsler, 2003) assesses general intelligence. Consistent with TADS, we estimated full-scale IQ using two WISC-IV subtests (Vocabulary and Block Design); combined, these two subtests demon-
Table 1. Baseline demographic information and clinical characteristics of participants

<table>
<thead>
<tr>
<th>Gender: n female (%)</th>
<th>19 (67.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: M (SD)</td>
<td>15.43 (1.16)</td>
</tr>
<tr>
<td>Race: n (%)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>11 (39.3)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>10 (35.7)</td>
</tr>
<tr>
<td>Biracial</td>
<td>5 (17.9)</td>
</tr>
<tr>
<td>Asian</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>Additional diagnosis: n (%)</td>
<td></td>
</tr>
<tr>
<td>Generalized anxiety disorder</td>
<td>13 (46.4)</td>
</tr>
<tr>
<td>Social phobia</td>
<td>4 (14.3)</td>
</tr>
<tr>
<td>Specific phobia</td>
<td>3 (10.7)</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>ADHD</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>Outcome measure: M (SD)</td>
<td></td>
</tr>
<tr>
<td>CDRS-R</td>
<td>60.29 (10.24)</td>
</tr>
<tr>
<td>BDI-II</td>
<td>27.84 (10.69)</td>
</tr>
<tr>
<td>CGI-S</td>
<td>4.43 (0.73)</td>
</tr>
<tr>
<td>CBCL Withdrawn/Depressed</td>
<td>72.25 (9.31)</td>
</tr>
<tr>
<td>CHS</td>
<td>16.29 (4.98)</td>
</tr>
<tr>
<td>BADS</td>
<td>65.49 (23.97)</td>
</tr>
</tbody>
</table>

Note: CDRS-R = Children's Depression Rating Scale–Revised; BDI-II = Beck Depression Inventory, 2nd Edition; CGI-S = Clinical Global Impressions–Severity scale; CBCL Withdrawn/Depressed = Child Behavior Checklist Withdrawn/Depressed subscale; CHS = Children’s Hope Scale; BADS = Behavioral Activation for Depression Scale

Table 2. Timeline of assessments

<table>
<thead>
<tr>
<th>Measure</th>
<th>Baseline</th>
<th>Midpoint</th>
<th>End of Treatment</th>
<th>3-Month Follow-Up</th>
<th>6-Month Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic interviews</td>
<td>K-SADS</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>A-LIFE</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Intelligence measure</td>
<td>WISC-IV</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Depression severity measures</td>
<td>CDRS-R</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>CBCL-P</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>CGI-S</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Self-report measures</td>
<td>BDI-II*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>BADS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>CHS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other measures</td>
<td>TSQ</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The Children’s Depression Rating Scale–Revised (CDRS-R; Poznanski & Mokros, 1996) is a 17-item clinician-administered interview that assesses severity of depression symptoms using information from youth and their parents. Raw scores range from 17 to 113 and are calculated as the simple sum of assessor-derived ratings for each of the 17 symptom areas. We used the same CDRS-R scores to define study entry (≥245) and remission status (<27) as were used in TADS. A raw score of 45 falls in the T-score range of 65–74 and indicates that a depressive disorder is likely; higher scores suggest increasing levels of symptom severity. By contrast, a raw score of 27 falls in the T-score range of 40–54 and indicates that a depressive disorder is unlikely to be confirmed on further evaluation. The CDRS-R has demonstrated high inter-rater reliability (Poznanski & Mokros; $\alpha = 0.92$), good 2-week test-retest reliability (0.80), and very good internal consistency ($\alpha = 0.85$). Inter-rater reliability for the CDRS-R in the present study ranged from good (baseline $\kappa = 0.72$) to excellent (end of treatment $\kappa = 0.95$). The CDRS-R demonstrated modest internal consistency at baseline ($\alpha = 0.69$) and good internal consistency at all other assessment points in the current study (midpoint = 0.92, end of treatment = 0.96, 3-month follow-up = 0.92, 6-month follow-up = 0.91).

The Treatment Satisfaction Questionnaire (TSQ; Ritschel & Craighead, 2010) is a 10-item semi-structured exit interview that was created for the present study. Quantitative items are scored from 1 to 10, with 10 being totally satisfied and 1 being not at all satisfied. Qualitative items include open-ended questions designed to allow for feedback about the treatment and study procedures.

**Self- and Parent-Report Measures.** The Child Behavior Checklist for Ages 6–18 (CBCL 6–18; Achenbach & Rescorla, 2001) is a self-report measure completed by parents to describe their child’s behavioral and emotional difficulties. The CBCL is one of the most widely used parent-report measures of youth psychopathology, has demonstrated excellent psychometric properties, and has standardized cutoff scores for various clinical diagnoses. For the purpose of the present study, we used the Withdrawn/Depressed syn-
drome scale of the CBCL, which has been shown to accurately discriminate youth with MDD from those without the diagnosis (Ebesutani et al., 2010). Raw scores on the Withdrawn/Depressed syndrome scale range from 0 to 16 and are converted to T-scores based on age and gender. T-scores from 65 to 69 are in the borderline clinical range, and T-scores greater than or equal to 70 are in the clinical range (Achenbach & Rescorla, 2001). The CBCL Withdrawn/Depressed scale demonstrated low internal consistency at baseline (α = 0.41) and good internal consistency at each other assessment in this study (end of treatment = 0.81, 3-month follow-up = 0.91, 6-month follow-up = 0.91).

The Beck Depression Inventory, 2nd edition (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item questionnaire that assesses depression severity. Items are scored from 0 to 3, with higher scores indicating greater symptom severity. Possible scores range from 0 to 63; scores less than 14 are considered within normal limits. Clinical cutoffs have been designated as follows: Scores from 14 to 19 indicate mild depression, 20 to 28 indicate moderate depression, and 29 to 63 indicate severe depression. The BDI-II has high internal consistency (α = 0.93) and test–retest reliability (0.93 for a 1-week interval; Beck et al., 1996). Studies of the BDI-II with adolescent outpatient samples have found similarly high internal consistency (α = 0.92) with participants as young as age 13 (Steer, Kumar, Ranieri, & Beck, 1998). The BDI-II demonstrated good internal consistency at each assessment point in the current study (baseline = 0.89, midpoint = 0.96, end of treatment = 0.95, 3-month follow-up = 0.98, 6-month follow-up = 0.92).

The Behavioral Activation for Depression Scale (BADS; Kanter et al., 2007) comprises 25 items scored from 0 to 6. Items are summed to generate an overall score. Possible scores range from 0 to 150, with higher scores indicating higher levels of activation. In adult samples, the BADS has demonstrated good internal consistency (α = 0.87), 1-week test–retest reliability (r = 0.74), and construct validity. In an adult community sample with moderate depressive symptoms, the mean BADS score was 69.83 (SD = 20.15; Kanter, Rusch, Busch, & Sedivy, 2009). The BADS demonstrated good internal consistency at each assessment point in the current study (baseline = 0.89, end of treatment = 0.96, 3-month follow-up = 0.94, 6-month follow-up = 0.96).

The Children’s Hope Scale (CHS; Snyder et al., 1997) is a six-item questionnaire that assesses dispositional hope in youth ages 7–17. Items are scored from 0 to 6, with higher scores indicating higher hope; total scores range from 6 to 36. The scale assesses a child’s perception of his or her ability to set and work toward personal goals. The CHS has demonstrated good internal consistency (median α = 0.77) and good 1-month test–retest reliability (0.71). Higher hope is also related to better psychological adjustment and thus provides a more global measure of well-being (Snyder, Ildari, Michael, & Cheavens, 2000). The CHS demonstrated modest internal consistency at baseline (α = 0.69) and good internal consistency at each other assessment in the current study (end of treatment = 0.92, 3-month follow-up = 0.91, 6-month follow-up = 0.91).

**Clinician-Administered Measures.** The Clinical Global Impression Scale–Severity (CGI-S; Guy, 1976) is a single-item measure completed by clinicians to describe a patient’s symptom severity on a 7-point scale (1, normal, not at all ill; 2, borderline mentally ill; 3, mildly ill; 4, moderately ill; 5, markedly ill; 6, severely ill; 7, among the most extremely ill patients). The CGI is widely used in clinical research and is sufficiently sensitive to discriminate treatment responders from nonresponders in depression treatment trials (Guelfi, 1990).

**Response and Remission Criteria**

Consistent with other studies of pediatric depression (e.g., Kennard et al., 2009) and with the MacArthur Guidelines (Frank et al., 1991), each participant was assigned a depression status variable at the end of treatment (i.e., full remitter, responder, or nonresponder) and follow-up assessments (i.e., full remitter, responder, nonresponder, or relapsed). Full remitters showed no evidence of MDD for at least 2 full weeks prior to the end of treatment assessment and had CDRS-R scores less than 27. Treatment responders met one but not both criteria for remission (i.e., they no longer met criteria for MDD but had CDRS-R scores >27 or vice versa). Nonresponders continued to meet criteria for depression and had CDRS-R scores >27. At follow-up
assessments, participants were classified as relapsed if they had previously been classified as full remitters or responders but then went on to meet full criteria for MDD at some point during the follow-up period.

Treatment and Therapists
Therapists in the study were trained in BA during a 2-day on-site workshop conducted by Dr. Dimidjian, one of the developers of the BA intervention. Following this training, the first and last authors consulted with Dr. Dimidjian on several occasions as planning began for this project and as work began to adapt BA for adolescents (e.g., when questions arose in manual development). The BA treatment manual for adolescents that we developed (Ritschel & Craighead, 2011; see also Ritschel et al., 2011) includes six phases of treatment: orientation, getting active, problem solving, setting goals and subgoals, practice, and relapse prevention. It is important to note that BA is a theory-driven intervention; thus, therapists are not mandated to follow the manual in a formulaic, session-by-session manner. Rather, the treatment affords therapists and clients the flexibility to decide collaboratively how much time to dedicate to each skill set and the ability to move fluidly back and forth between phases as needed. Participants are invited to attend a maximum of 22 sessions across 18 weeks, and adolescents are allowed to invite parents, friends, and significant others to attend sessions as they see fit.

Therapists for this study included three doctoral-level psychologists and two advanced graduate students. The last author on this article, a psychologist with more than 40 years of experience with behavioral interventions (WEC), served as an expert consultant throughout the course of this project. The therapists met weekly for team supervision; in addition, graduate students received an extra hour of weekly supervision by the doctoral-level psychologists. Although formal adherence was not evaluated, session videotapes were reviewed on a rotating basis to check for evidence of adherence to the model. When questions arose regarding therapist drift, we consulted the published literature on implementing BA (e.g., Dimidjian et al., 2008; Martell, Dimidjian, & Herman-Dunn, 2010; Martell et al., 2001); in addition, when specific questions arose, the lead therapist and principal investigator (LAR) consulted with Dr. Craighead to determine the appropriate course of action.

Procedure
This study was conducted at an outpatient treatment clinic in the southeast United States. Recruitment efforts included a radio advertisement as well as posting flyers at area schools and in nearby public venues (e.g., grocery stores). In addition, callers to our clinic who were seeking treatment for depressed adolescents were offered the opportunity to participate. Scripted phone screens were completed to determine preliminary eligibility; in-person screening with trained assessors was used to determine final eligibility. As indicated in Table 2, the K-SADS, CDRS-R, and WISC-IV subtests were completed during the in-person screen. Eligible participants were then assigned to a BA therapist. With the exception of the BDI-II (which was completed every 2 weeks), self- and parent-report instruments were completed prior to the first therapy session and again at post-treatment. Midpoint assessments were completed at week 9, and end-of-treatment assessments were completed at week 18. Participant flow is presented in Figure 1.

Data Analysis Plan
Our primary outcome measures of interest were those that measured changes in depression using data from multiple informants (i.e., CDRS-R, BDI-II, CGI-S, CBCL). Repeated-measures analyses of variance (ANOVAs) with three time points (baseline, midpoint, and end of treatment) were conducted to evaluate changes on CDRS-R, BDI-II, and CGI-S scores. To further examine temporal changes, significant omnibus tests were followed with post hoc paired-samples t-tests comparing baseline to midpoint and midpoint to end-of-treatment scores. Changes in the CBCL Withdrawn/Depressed subscale, CHS, and BADS scores from baseline to end of treatment were also evaluated using paired-samples t-tests. Repeated-measures ANOVAs with three time points (end of treatment, 3-month follow-up, and 6-month follow-up) were conducted to assess maintenance of gains on CDRS-R, BDI-II, CBCL Withdrawn/Depressed subscale, CHS, and BADS scores over the 6 months following treatment. Significant omnibus tests were further examined using
post hoc paired-samples t-tests comparing end-of-treatment to 3-month follow-up and 3-month follow-up to 6-month follow-up scores. Only participants with data from each assessment were included in analyses, which resulted in information on 21 of 28 participants (75%) from baseline through the end of treatment (i.e., one participant missed one assessment point) and 14 of 17 possible participants (82%) from the end of treatment through the 6-month follow-up (i.e., three participants missed one assessment point). Mean substitution was used to accommodate the minimal amount (<1%) of missing item-level self-report data.

Masicampo and Lalande (2012) suggest that study outcomes may be better represented using effect sizes rather than p-values, and Levine and Hullett (2002) recommend reporting effect sizes using partial eta squared. Accordingly, in addition to p-values, within-subjects partial eta squared values (η²_p) and Cohen’s d effect sizes are reported for all analyses to provide a standardized estimate of treatment effects. Partial eta squared values of 0.04, 0.25, and 0.64 represent small, medium, and large effect sizes, respectively (Ferguson, 2009); correspondingly, Cohen’s d scores of 0.20, 0.50, and 0.80 represent small, medium, and large effect sizes, respectively (Cohen, 1992). To avoid inflated effect sizes due to correlated pre- and post-treatment scores (Dunlap, Cortina, Vaslow, & Burke, 1996), Cohen’s d scores were calculated using original means and standard deviations instead of paired t-values.

For our secondary questions of interest, we examined the impact of baseline activation on treatment response by examining the relationship between the BADS and each of the outcome measures of depression. First, correlational analyses were estimated to evaluate the bivariate associations between overall BADS and baseline depression scores. Next, hierarchical regression analyses were conducted, wherein end-of-treatment depression scores were regressed on baseline depression scores in Step 1, followed by overall BADS scores in Step 2. We followed a similar procedure to evaluate the impact of session attendance on each of the depression outcome measures.

RESULTS
Means and standard deviations for all baseline measures are presented in Table 1. Compared to standardization samples, baseline scores on all depression measures indicated that this was a moderately to severely depressed sample of adolescents. In comparison with both normative and clinical samples (Snyder et al., 1997), baseline CHS scores suggested that participants reported low levels of hope. Moreover, participants exhibited low levels of behavioral activation compared to the samples in which the BADS was initially validated (Kanter et al., 2007) and were more similar to a depressed community sample (Kanter et al., 2009).

Attendance and Attrition
All participants were offered a maximum of 22 individual therapy sessions over the course of 18 weeks. Because we were interested in evaluating what both participants and therapists thought to be the necessary number of sessions to achieve symptom remission, we did not set a minimum number of sessions required to be considered a completer; thus, treatment completion was defined by the following factors: (a) attending as many sessions as the participant and therapist collaboratively deemed necessary; and (b) the participant completing end-of-treatment assessments. Attendance ranged from 7 to 18 sessions (M = 14.45, SD = 2.52). Of the 28 adolescents who began BA, 22 (78.6%) completed the study. Two of the six noncompleters were removed from the study and analyses by the principal investigator; one participant encountered legal difficulties and was court-ordered to treatment, precluding voluntary participation in the study. After a month of treatment, the second participant acknowledged having drastically underreported current and past levels of suicidal ideation and current, severe nonsuicidal self-injury (NSSI) at the baseline assessment. Because BA has not been evaluated as a treatment for NSSI, and because a treatment exists with considerable empirical support for treating this class of behaviors (i.e., dialectical behavior therapy [DBT]), this participant was withdrawn from the study and referred to a DBT program. The other four participants voluntarily withdrew from the study.

Independent samples t-tests indicated that, at baseline, completers (M = 17.32, SD = 4.46) reported significantly higher levels of hope than noncompleters (M = 12.50, SD = 5.36), t(26) = 2.25, p < .05, d = 0.98. Completers (M = 73.14, SD = 9.64) were
also rated by their caregivers as exhibiting significantly higher CBCL Withdrawn/Depressed scores than non-completers (M = 66.00, SD = 0.00) at baseline, t(20) = 3.40, p < .01, d = 0.74. Completers did not differ from noncompleters on any other demographic or outcome variable at baseline.

Assessment of Treatment Effects
To assess treatment effects, we evaluated remission status for all treatment completers (n = 22). At the end of treatment, 20 participants no longer met criteria for MDD (i.e., 90.9% of treatment completers, or 80.0% of the initial sample). In terms of depression status variables, 12 participants (54.5% of treatment completers, or 48.0% of the initial sample) were classified as full remitters at the end of treatment, eight (36.4% of treatment completers, or 32.0% of the initial sample) were classified as responders, and two (9.1% of treatment completers, or 8.0% of the initial sample) were classified as nonresponders (see Table 3). Repeated-measures ANOVAs were used to examine the effect of treatment on the outcome variables of interest (CDRS-R, BDI-II, CGI-S, CBCL, CHS, and BADS); when significant, paired-samples t-tests were conducted to evaluate patterns of change over time (see Figure 2a–f). Results indicated there were significant decreases in scores from baseline to end of treatment on the CDRS-R, F(2, 40) = 33.60, p < .001, \( \eta^2_p = 0.63 \), and BDI-II, F(2, 40) = 34.14, p < .001, \( \eta^2_p = 0.63 \). For CGI-S analyses, Mauchly’s test indicated that the assumption of sphericity was violated, \( \chi^2(2) = 6.78, p < .05 \); therefore, Greenhouse–Geisser estimates are reported. Participants demonstrated a significant decrease in clinician-rated severity of depressive symptoms on the CGI-S over the course of treatment, F(1.47, 23.47) = 24.80, p < .001, \( \eta^2_p = 0.61 \). Follow-up paired-samples t-tests showed that a greater proportion of change occurred early in treatment for all outcome variables: There was a significant decrease in CDRS-R scores from baseline to midpoint, t(20) = 5.23, p < .001, d = 1.21, and from midpoint to end of treatment, t(20) = 2.44, p < .05, d = 0.54. Significant decreases in BDI-II scores occurred from baseline to midpoint, t(20) = 5.35, p < .001, d = 1.27, and midpoint to end of treatment, t(20) = 2.92, p < .01, d = 0.64. Significant decreases in CGI-S scores occurred from baseline to midpoint, t(16) = 5.80, p < .001, d = 1.57, and midpoint to end of treatment, t(16) = 5.23, p < .05, d = 0.67.

Results from paired-samples t-tests evaluating change from baseline to end of treatment also indicated a significant decrease in CBCL Withdrawn/Depressed scores, t(20) = 5.67, p < .001, d = 1.24. Along with improvements in depressive symptoms, there was a concurrent increase in scores on the CHS, t(20) = -4.02, p = .001, d = -0.98, and the BADS, t(15) = -4.06, p = .001, d = -1.06. Treatment effect sizes, calculated using Cohen’s d, were in the large range for each outcome.

After controlling for baseline depression scores (using the corresponding baseline measurement for each assessment measure, respectively), session attendance significantly predicted higher end-of-treatment scores on the CBCL Withdrawn/Depressed scale (\( \beta = 0.43, t(20) = 2.40, p < .05, \Delta R^2 = 0.19 \)). Attendance was not found, however, to predict end-of-treatment CGI-S, \( \beta = 0.28, t(16) = 1.10, p = .29, \Delta R^2 = 0.06 \); BDI-II, \( \beta = 0.16, t(20) = 0.88, p = .39, \Delta R^2 = 0.02 \); or CDRS-R scores, \( \beta = 0.41, t(20) = 2.05, p = .06, \Delta R^2 = 0.16 \).

Maintenance of Treatment Gains
This study employed an uncontrolled, naturalistic 6-month follow-up design. Referrals were provided on request at the end of treatment. To our knowledge,

| Time Point          | Remission |  | Response |  | Nonresponder |  | Relapse |  |
|---------------------|-----------|-------------|----------|-------------|----------|---------|-------|
|                     | n         | %           | n        | %           | n        | %       | n     | %     |
| End of treatment (n = 22) | 12 | 54.6 | 8 | 36.4 | 2 | 9.0 | n/a   |
| 3-month follow-up (n = 17) | 6 | 35.3 | 5 | 29.4 | 2 | 11.8 | 4 | 23.5 |
| 6-month follow-up (n = 16) | 8 | 50.0 | 5 | 31.3 | 2 | 12.5 | 1 | 6.3 |

Table 3. Depression status variables by time point
Figure 2. (a–f) Changes in outcome scores from baseline through the 6-month follow-up. Upper bars display significance and effect sizes for paired-samples t-tests. Two lines are shown for each analysis due to different sample sizes at each time point.

Notes: CDRS-R = Children’s Depression Rating Scale–Revised; BDI-II = Beck Depression Inventory, 2nd Edition; CBCL With./Dep. = Child Behavior Checklist Withdrawn/Depressed subscale; CHS = Children’s Hope Scale; BADS = Behavioral Activation for Depression Scale; CGI-S = Clinical Global Impressions Scale–Severity; BL = baseline; Mid = midpoint; EOT = end of treatment; 3-mo = 3-month follow-up; 6-mo = 6-month follow-up.
seven of the 22 treatment completers sought some form of treatment during the follow-up period, ranging from one booster session to regular ongoing therapy. More specifically, one participant sought one booster session, one participant sought three booster sessions, and five continued to receive ongoing therapy. Seventeen participants completed the 3-month follow-up assessment, and 16 completed the 6-month follow-up assessment.²

According to the A-LIFE, the majority of participants maintained treatment gains or demonstrated continued improvements in depression status during follow-up. Notably, the two participants who were nonresponders at the end of treatment assessment showed no change in depression status throughout follow-up, despite having elected to continue in treatment. Depression status variables for all participants are shown in Table 3.

Repeated-measures ANOVAs were conducted to assess maintenance of treatment gains over the 6 months following treatment. There was no effect of time on CHS scores, period after the BA treatment ended. However, there were gains were maintained during the 6-month draw/Depressed subscale scores, indicating that treatment showed no change in depression status throughout follow-up, despite having elected to continue in treatment. Depression status variables for all participants are shown in Table 3.

Revised-measures ANOVAs were conducted to assess maintenance of treatment gains or demonstrated continued improvements in depression status during follow-up. Notably, the two participants who were nonresponders at the end of treatment assessment showed no change in depression status throughout follow-up, despite having elected to continue in treatment. Depression status variables for all participants are shown in Table 3.

Repeated-measures ANOVAs were conducted to assess maintenance of treatment gains over the 6 months following treatment. There was no effect of time on CHS scores, period after the BA treatment ended. However, there was an effect of time on CHS scores, F(2, 26) = 4.99, p < .05, η_p^2 = 0.28. Results from follow-up paired-samples t-tests showed that although CHS scores did not change from end of treatment to the 3-month follow-up, there was a significant increase in hope from the 3-month follow-up to the 6-month follow-up, t(13) = −2.41, p < .05, d = −0.66, with a large effect size. Graphs of these outcomes are presented in Figure 2(a–f).

Impact of Baseline Activation on Treatment Outcomes

Preliminary analyses indicated baseline overall BADS scores were significantly inversely correlated with baseline BDI-II, r(23) = −0.64, p = .001, CGI-S, r(23) = −0.42, p < .05, and CBCL Withdrawn/Depressed, r(16) = −0.53, p < .05, scores, but not CDRS-R scores, r(16) = −0.15, p = .50. After controlling for baseline depression scores (using the corresponding baseline measurement for each assessment measure, respectively), higher baseline BADS scores predicted lower end-of-treatment depression scores on the CDRS-R, β = −0.60, t(15) = −3.30, p < .01, ΔR^2 = 0.36; CGI-S, β = −0.49, t(16) = −2.20, p < .05, ΔR^2 = 0.21; and CBCL Withdrawn/Depressed scale, β = −0.63, t(15) = −2.71, p < .05, ΔR^2 = 0.28, and resulted in a significant R^2 change in each regression equation. Baseline BADS scores did not, however, predict end-of-treatment BDI-II scores or result in a significant R^2 change, β = −0.15, t(15) = −0.59, p = .56, ΔR^2 = 0.01.

Treatment Satisfaction

In addition to assessing changes in depression, we also were interested in participants’ feedback based on their experience in the study. We collected quantitative and qualitative data from adolescents and parents using a semi-structured exit interview that was conducted during the end-of-treatment assessment. Based on a 1–10 scale, with 10 being totally satisfied and 1 being not at all satisfied, both adolescents (M = 8.86, SD = 1.55) and parents (M = 9.28, SD = 0.91) reported a high degree of treatment satisfaction. Each participant reported being able to understand the lessons and strategies discussed in therapy sessions. Adolescents generally reported that they would not make any improvements to the treatment, with the exception of one participant who indicated that there was too much paperwork (i.e., consent forms and baseline assessments) at the beginning of the study. All participants and parents indicated that they would recommend this therapy to friends or family.

DISCUSSION

The aims of the present pilot study were to further explore the potential efficacy of BA for depressed adolescents and to examine the impact of baseline levels of activation on treatment outcomes. Results were encouraging and suggested that BA is a viable and efficacious treatment for MDD in youth. Commensurate with our hypotheses, participants who completed treatment showed significant improvements in depressive symptoms, and these findings were consistent across multiple informants (i.e., participants, parents, clinicians, and independent assessors). Medium to large effect sizes were found for all variables of interest during active treatment, although it bears noting that these are within-subjects effect sizes (which tend to be
larger than between-subjects effect sizes). Similar to the findings for adult depression (Ilardi & Craighead, 1999), greater effect sizes were shown in the first 9 weeks of treatment. At the end-of-treatment assessment, 91% of treatment completers met either response (36.4%) or full remission (54.5%) criteria, and the majority of these individuals (81%) maintained their gains for an additional 6 months beyond the end-of-treatment. A portion of our sample (32%) sought some form of ongoing treatment during the naturalistic follow-up period.

These findings can be contextualized in relation to outcomes from the Treatment for Adolescents with Depression Study (TADS; March et al., 2004), in which 439 adolescents were randomized to receive CBT, fluoxetine, or a combination of the two. At 18 weeks, response rates across conditions ranged from 65% (CBT only) to 85% (combined treatment), and medium to large effect sizes were reported for all outcome variables. TADS also included a naturalistic follow-up called the Survey of Outcomes Following Treatment for Adolescent Depression (SOFTAD). Recently published studies from the SOFTAD demonstrate that 58% of participants (n = 196) sought some form of treatment after the conclusion of the active TADS trial (Brenner et al., 2015).

Our secondary hypothesis, which investigated what Cheavens et al. (2012) refer to as capitalization versus compensation models, was not supported. Namely, adolescents who were more active at baseline derived greater benefit from the treatment as compared to those who were less activated, which supports the capitalization model. This finding is not necessarily surprising given the results that have been reported in the psychosocial intervention literature with regard to matching clients to treatment. Equivocal evidence has emerged from various studies that have investigated whether therapeutic interventions are more likely to be effective if they build on a client’s existing strengths (the capitalization model) as compared to compensating for a client’s deficits (the compensation model; for a review, see Simon & Perlis, 2010). Consistent with our original hypotheses, evidence has emerged in favor of the compensation model (e.g., Miller et al., 2005; Strauman et al., 2006). Conversely, research evidence also supports the capitalization model. For example, Cheavens et al. (2012) randomized depressed adults to one of two CBT conditions after assessing their relative strengths and weaknesses; results showed that individuals in the capitalization condition improved more quickly and to a greater degree than those in the compensation condition. Similarly, Sotsky et al. (1991) found that individuals with severe cognitive distortions do less well over a course of CBT than do those individuals who have milder cognitive distortions. In the current cohort, BA seemed to produce better outcomes for those individuals who were more active at baseline, consistent with the capitalization model. Of course, the current findings need replication, but this finding may very well have implications as the field moves forward in the development of “personalized interventions,” as it may be important to match depressed patients to the therapies for which they have less aberrant baseline weaknesses.

On average, participants attended 14.5 of the maximum 22 sessions (69%) that were offered across this 18-week study. In comparison, participants in TADS attended 11 of 15 possible sessions (73%) across 12 weeks (March et al., 2004), and participants in the TORDIA study attended 8.3 of 15 possible sessions (55.3%) across 12 weeks (Brent et al., 2008). Secondary analyses of TORDIA data (Kennard et al., 2009) showed that participants who attended nine or more sessions were significantly more likely to achieve depression remission than those who attended fewer than nine sessions. We were similarly interested in whether participants who attended more sessions derived greater benefit. Regression analyses of this question were mixed. Session attendance was unrelated to changes in depressive symptomology when examining changes on the CGI (clinician rated), BDI-II (youth rated), and CDRS-R (combined responses from parents and youth); however, results from the CBCL (parent rated) indicated that greater session attendance significantly predicted higher end-of-treatment depression scores. These findings are interesting in light of our decision not to mandate a minimum number of sessions, especially as clinicians, parents, and youth were all consulted to make decisions about ending treatment. Various possibilities exist to explain why higher end-of-treatment parent ratings of depression are associated with increased session attendance even when teens, clinicians, and assessors do not hold the
same views; for example, parents may believe more
treatment signifies greater illness or there may be parent
variables that were not assessed (e.g., parents with cur-
rent or lifetime anxiety or depression diagnoses of their
own). Alternatively, parents are not included in every
treatment session and may be unaware of gains that
their adolescent made in treatment; of course, parents
may also have more evidence of ongoing depressive
symptoms at home than clinicians have. Regardless of
total sessions attended, greater gains were clearly made
in the first 9 weeks of treatment.

As noted previously, participants and their parents
both indicated high levels of satisfaction with both the
BA treatment and the study protocols. Participants
were given the opportunity to provide feedback about
the handouts, assignments, goals, length of treatment,
and assessments; no significant changes were recom-
mended. In the qualitative portion of the TSQ, we
asked participants whether anything had changed in
their lives since starting therapy. Responses included
positive comments such as “I have been more social
and outgoing,” “Things don’t seem dull anymore,” “I
have been more happy and more involved with school
and friends,” and “My social life has changed a lot as
well as the way I feel about myself as a person.” When
asked whether they had noticed any changes in their
child since starting therapy, sample parent responses
included “My son is more confident, he communicates
more than ever, his self-esteem is higher, and he is
more active,” “My daughter is doing more on her
own, taking initiative, reaching out to friends, and
making plans,” and “I have my old daughter back
again.” Broadly speaking, these results were quite
encouraging, both because adolescents can be difficult
to engage in treatment and because offering an inter-
vention that both parents and adolescents find accept-
able and satisfying is likely to be protective against
attrition. It was encouraging that only one participant
commented on the amount of paperwork that was
associated with study participation. Adolescents (and
particularly depressed adolescents) often feel burdened
by their schoolwork; thus, it was important to learn
whether they would find BA skills and a homework-
focused treatment to be too reminiscent of school.
The current qualitative data suggest this was not a
problem. Moreover, clinical research studies likely
involve more paperwork than standard outpatient
treatment, so it appears unlikely that community pro-
viders would encounter this criticism.

Limitations and Future Directions
Several caveats bear mentioning. First, no firm conclu-
sions can be drawn regarding the efficacy of BA given
that no comparison condition was employed. We also
did not use an intent-to-treat design, in which we
would have obtained (or attempted to obtain) assess-
ments from the six participants who withdrew to con-
trol for the effects of dropout. The fact that reports
were obtained by multiple informants suggests that
changes in depression did in fact occur (as opposed to
the perception of change occurring in its absence).
These changes, however, could be attributed to matu-
ration, regression to the mean, spontaneous remission,
or other factors rather than to the treatment itself
(Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2014).

Second, adherence ratings were not obtained; to date,
no formalized fidelity coding measure exists for the BA
manual that we adapted. Other studies of BA that have
included adherence and competence ratings used scales
that were locally developed (e.g., Hopko et al., 2011)
and, to our knowledge, have not been made publicly
available or been systematically evaluated. This caveat is
somewhat mitigated by the fact that the lead therapist
and supervisors were trained directly by one of the
developers of the adult BA protocol (Dimidjian) and that
tapes of all therapists were routinely reviewed and dis-
cussed in group supervision. Nevertheless, the develop-
ment of a standardized adherence and competence
measure for BA for youth remains an important need
and consideration for future research in this area.

Third, we employed a naturalistic follow-up design,
precluding the ability to draw meaningful conclusions
regarding follow-up data from participants. Because
we neither encouraged nor discouraged participants
from continuing in treatment, and because we did not
systematically collect data from participants on this
topic during follow-up, we were unable to determine
the reasons why additional care was sought by a subset
of participants. A number of possibilities must be con-
sidered, including the desire to work on therapeutic
targets other than depression (e.g., anxiety, family
issues), dissatisfaction with end-of-treatment results,
concerns about depressive relapse, or worries about upcoming stressors (e.g., the beginning of a new school year).

Fourth, rather than requiring a minimum number of sessions to be attended, we allowed clinicians and clients to decide collaboratively when treatment would end. Similarly, although the clearly articulated therapeutic goal was remediation of depressive symptoms, we did not set a required CDRS-R or BDI score that a participant had to meet to discontinue treatment. We made this decision for two reasons. In our pilot work (Ritschel et al., 2011), several participants reported that they felt that 18 sessions was beyond what they needed to achieve symptom remission. In addition, this approach is more reflective of real-world practice and thus increases generalizability of results. Nevertheless, we made a strategic sacrifice in not standardizing session attendance for all participants, as is typically carried out in psychotherapy outcome studies.

In conclusion, BA appears to be a viable treatment for depressed youth. The results suggest that our treatment protocol is tolerable for patients and families and is thus well positioned for more rigorous empirical study under controlled, randomized conditions. A number of empirically supported treatments appear to be effective for depressed youth, yet no treatment has demonstrated efficacy for all patients, and BA is no exception based on current findings. Although preliminary studies that aim to match patients to effective first-line treatments for depression are underway (e.g., Dunlop et al., 2012), no conclusive personalized algorithm yet exists for mood disorders. Our findings suggest that BA may be another option for depressed youth.

NOTES
1. As noted in Figure 1, the first five participants who were entered into the study were only seen for acute treatment and were not asked to complete follow-up assessments.
2. As noted previously, the first five participants completed acute treatment only and did not complete follow-up assessments. As noted in Figure 1, 17 participants were eligible for follow-up assessments.

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