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In-session rumination during CBT for depression:
Implications for treatment outcomes and the working alliance

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# In-session rumination during CBT for depression: Implications for treatment outcomes and the working alliance

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An abstract of
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in Psychology
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## Abstract

In-session rumination during CBT for depression:
Implications for treatment outcomes and the working alliance

By Jamie C. Kennedy

Although many patients experience significant improvement when participating in Cognitive Behavior Therapy (CBT) for depression, some patients fare less well. The current study evaluated if the extent to which patients ruminated during therapy sessions (i.e., in-session rumination) explained why some patients do less well in treatment. The specific aims were to develop an observational measure of in-session rumination and to evaluate its relationship with depressive symptoms and ratings of the therapeutic relationship. Rated therapy sessions came from sixty-three treatment naïve patients (52.4% female; $M_{age}$ = 40.1; 74.6% Caucasian) with Major Depression who participated in CBT as part of the PReDICT randomized controlled trial. In-session rumination was operationalized as the extent to which patients talked about their problems in a repetitive, negative, and passive way during therapy. A team of two trained undergraduates produced ratings of both the intensity and duration of in-session rumination that occurred during fifty-seven initial therapy sessions (i.e., session one), and another equally-trained team produced ratings for forty-five sessions in the middle of treatment (i.e., session eight). Intraclass correlation coefficients evaluated the reliability of the observational ratings, and linear-mixed models and linear regressions were used for the analyses of depressive symptoms and ratings of the working alliance. Results indicated that the observational ratings were sufficiently reliable (all *ICC*s > .69), and the ratings generally correlated with depressive symptom as expected. Specifically, there was some evidence of a cross-sectional relationship between in-session rumination and self-reported symptoms at the beginning of treatment, and there was consistent evidence that higher levels of in-session rumination predicted higher levels of subsequent clinician-rated depressive symptoms. In-session rumination was not, however, related to subsequent self-reported depressive symptoms or ratings of the working alliance. This study adds to our understanding of why some patients do less well when participating in CBT for depression, and the results support efforts to integrate rumination-specific interventions into treatment for depression.

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# In-session rumination during CBT for depression: Implications for treatment outcomes and the working alliance

Evidence from randomized controlled trials indicates that certain manualized therapies, such as Cognitive Behavior Therapy (CBT; Beck, Rush, Shaw, & Emery, 1979), can effectively treat Major Depressive Disorder (MDD) (Cuijpers, Cristea, Karyotaki, Reijnders, & Huibers, 2016). However, many patients do not respond to such interventions (Craighead, in press; Cuijpers et al., 2014), suggesting the need for further innovations in treatment research and development. One promising approach harnesses findings from basic science to shift the conceptualization of clinical problems from DSM-defined disorders (e.g., MDD) to more fundamental psychological processes (e.g., Insel et al., 2010). Another approach, often referred to as personalized or precision interventions, evaluates individual patient characteristics that predict treatment response and designate the need for alternative interventions (Dunlop et al., 2017). Yet another approach emphasizes the psychotherapy process, including in-session behavior and the quality of the therapeutic relationship (e.g., Castonguay, Goldfried, Wiser, Raue, & Hayes, 1996). Identifying a psychological process (e.g., *rumination*), one that transcends interventions and permits the integration of these diverse approaches to research, represents a promising way of improving treatment outcomes.

## Rumination

Rumination is a construct grounded in basic science and with important implications for the treatment of depression (See Appendix A for an extensive review). Within Nolen-Hoeksema's Response Styles Theory, rumination referred to a maladaptive way of responding to one's distress. These maladaptive strategies included: "repetitively focusing on the fact that one is depressed; on one's symptoms of depression; and on the causes, meanings, and consequences

of depressive symptoms" (Nolen-Hoeksema, 1991, p.569). Rumination begins as an attempt to explain one's current mood or distress (e.g., "why is this happening to me?" or "what does this mean?") and expands to become a repetitive, somewhat uncontrollable chain of thoughts about other problems, self-blame and criticism, or emotions (Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Morrow & Nolen-Hoeksema, 1990). Although it shares characteristics, like negative valence, with other depressogenic cognitive variables (e.g., negative automatic thoughts; Beck et al., 1979), rumination is characterized by its typical content (e.g., causes and consequences of depression) and its repetitive and passive (i.e., not action-oriented) *style* (Nolen-Hoeksema et al., 2008).

Considerable evidence implicates rumination in the etiology and maintenance of depression (for review see: Nolen-Hoeksema et al., 2008). Several meta-analyses show that self-reported rumination and depressive symptoms are consistently associated in both clinical and non-clinical samples (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Mor & Winquist, 2002; Olatunji, Naragon-Gainey, & Wolitzky-Taylor, 2013). Moreover, longitudinal studies show that, after controlling for baseline depressive symptoms, self-reported rumination predicts the onset and recurrence of depressive episodes (Abela & Hankin, 2011; Just & Alloy, 1997; Nolen-Hoeksema, 2000; Spinhoven, Drost, de Rooij, van Hemert, & Penninx, 2016). Numerous experimental studies have found that rumination produces detrimental effects, such as exacerbating negative mood (e.g., Nolen-Hoeksema & Morrow, 1993), and clinical neuroscience research links rumination to abnormalities associated with the pathophysiology of depression (e.g., Hamilton, Farmer, Fogelman, & Gotlib, 2015). Given this evidence on the depressogenic effects of rumination, there is increasing interest in its implications for treatment.

**CBT and Rumination**

CBT is a leading form of evidence-based psychotherapy for depression, and it targets behavioral avoidance and negative thinking – important depressogenic processes – by having patients increase rewarding activities (i.e., behavioral activation) and challenge unhelpful thoughts (i.e., cognitive restructuring), respectively (Beck et al., 1979). Meta-analytic evidence indicates that CBT reliably helps many depressed patients (Cuijpers et al., 2016), although many do not respond or remit to treatment (Cuijpers et al., 2014). Watkins (2016), a leading rumination scholar, argues that one reason for CBT's limited efficacy is that it does not explicitly target repetitive thought processes like rumination and may be ill-suited for patients who habitually engage in ruminative processes. For example, Watkins claims that CBT's approach of challenging individual thoughts often fails when used to change an intense, habitual stream of negative thoughts (i.e., rumination), and he describes this clinical experience as, "trying to catch a waterfall one drop at time" (Watkins, 2016, p. 17). He also mentions that thought challenging can trigger further rumination, such as when a patient dwells on the intervention (e.g., "why can't I do this correctly?") or uses it to speculate on the causes, meanings, and implications of their symptoms.

Only a few studies have evaluated how rumination relates to CBT treatment outcomes in MDD, and the preliminary evidence supports Watkins's argument. In one study, Jones and colleagues (2008) treated 81 depressed patients with 16 – 20 sessions of CBT and found that higher pre-treatment self-reported rumination was associated with a lower frequency of remission; they also found that initial rumination predicted longer time to remission among those patients who did remit. Another study treated 52 depressed outpatients with CBT and found that greater baseline rumination predicted higher levels of clinician-rated and self-reported depressive symptoms at the end of treatment (Teismann, Willutzki, Michalak, & Schulte, 2008). It is worth

noting, however, that another study randomized 177 depressed patients to either CBT or Interpersonal Psychotherapy (IPT; Klerman, Weissman, Rounsaville, & Chevron, 1984) and found that baseline rumination was not associated with percent pre-post symptom change either within or across the treatments (Carter et al., 2011). Evidence from studies of CBT-informed psychotherapies that include interventions other than behavioral activation and cognitive restructuring (e.g., relaxation; assertiveness; problem-solving) also show that rumination predicts post-treatment depression symptoms (Ciesla & Roberts, 2002; Schmaling, Dimidjian, Katon, & Sullivan, 2002). In summary, evidence suggests that rumination predicts poorer response to CBT; however, those prior studies have exclusively relied on pretreatment self-report of rumination. An alternative, potentially more powerful, approach is to evaluate objectively the effect of in-session rumination on treatment outcomes.

**Methodological Considerations**

Most studies of rumination assess the construct with self-report measures (for review see: Smith & Alloy, 2009). The most widely-used measure, the Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991), assesses one's self-reported tendency to engage in ruminative behaviors during periods of distress (e.g., "think about how sad you feel" and "think--why do I always react this way?"). Consistent with prominent conceptualizations of rumination (e.g., Nolen-Hoeksema et al., 2008), the RSQ—and other self-report measures—primarily assess the construct as an intrapersonal (i.e., internal) cognitive process. A major benefit of using self-report measures is that they enable efficient assessment of participants' subjective experiences and general behavioral tendencies. Studies of self-reported rumination have added much to the literature, such as documenting rumination's clinical correlates (e.g., Aldao et al., 2010) and

refining its conceptualization and measurement (e.g., Treynor, Gonzalez, & Nolen-Hoeksema, 2003).

A less common and complementary methodology is to rate rumination as it is observed in participants' verbal behavior. For example, Nolen-Hoeksema and colleagues (1997) rated ruminative thoughts observed in transcripts of free-response interviews of bereaved partners and found that the ratings predicted subsequent psychological distress**.** Another study demonstrated that rumination could be observed and rated reliably in depressed inpatients' speech during a structured interview and during unstructured, naturalistic periods at a hospital (Nelson & Mazure, 1985). Developmental psychologists have also implemented observational ratings of co-rumination (Rose, Schwartz-Mette, Glick, Smith, & Luebbe, 2014), a construct that refers to interpersonal, conversational rumination that occurs within social relationships (Rose, 2002). Collectively, these studies illustrate rumination can be reliably observed in participants' verbal behavior, suggesting that it would be feasible to rate rumination in a treatment context.

Although producing observational ratings can be technically challenging and resource intensive, there are many benefits to implementing an observational measure of rumination during therapy. First, such an approach involves defining observable behavioral indicators of rumination, providing information not measured by self-report questionnaires and that could eventually help clinicians identify this clinically meaningful process. Second, observational methods shield researchers from cognitive biases associated with psychopathology (e.g., Gotlib & Joormann, 2010) that can confound how participants complete self-report measures (Hawes, Dadds, & Pasalich, 2013). Third, assessing patient's in-session rumination, which occurs in an intrapersonal context with their therapists, provides unique, contextual information about patient behavior that is not captured by more global self-report measures. This allows for more precise

evaluations of context-specific research questions, such as how in-session rumination predicts treatment outcomes and how it might relate to the relationship or "working alliance" between patient and therapist.

**Working Alliance**

The working alliance – also known as the therapeutic or helping alliance – refers to the relationship between a patient and therapist. Theories of the alliance draw from clinical perspectives that stress the importance of factors, such as a caring relationship, thought to contribute to all forms of effective psychotherapy (e.g., Bordin, 1979; Frank, 1961; Ilardi & Craighead, 1994). The most widely-used measure of the alliance, the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), assesses three alliance factors: agreement on treatment goals; consensus on the tasks of therapy; and the emotional bond between patient and therapist. Consistent with the theorized importance of the alliance, meta-analytic evidence supports a moderate, positive association between alliance and intervention outcomes across a broad array of treatments (Flückiger, Del Re, Wampold, & Horvath, 2018). Given this finding, researchers have investigated patient and therapist characteristics and behaviors that may affect the therapeutic relationship (Castonguay, Constantino, & Holtforth, 2006). This line of research enables therapists to anticipate problems with the alliance and adjust treatment accordingly.

Investigations of the interpersonal correlates of rumination suggest that higher levels of rumination are likely associated with *lower* ratings of the working alliance. For example, rumination has been associated with lower self-reported relationship satisfaction (Pearson, Watkins, Kuyken, & Mullan, 2010) and lower levels of self-reported and observer-rated interpersonal functioning (Lam, Schuck, Smith, Farmer, & Checkley, 2003). Ruminating individuals also report: feeling less satisfied with the support they receive (Aymanns, Filipp, &

Klauer, 1995), receiving less emotional support, and having more contentious relationships (Nolen-Hoeksema & Davis, 1999). Research also suggests that ruminative patients may endorse lower working alliance ratings with CBT therapists. One study found that individuals who tend to ruminate report less interest in participating in therapy that emphasizes changing behavior and problem-solving than in therapy that seeks to create insight into the meanings and causes of symptoms (Addis & Carpenter, 1999). This finding indicates that CBT therapists might feel frustrated with ruminative patients who prefer a less directive and active form of therapy. Such an effect would be reflected in lower therapist-ratings of the working alliance.

Despite the evidence that rumination correlates with negative interpersonal outcomes, the one study that has evaluated the relationship between rumination and therapist- and patient-rated working alliance failed to find such a relationship (Teismann, Michalak, Willutzki, & Schulte, 2012). The authors interpreted their finding as indicating that therapists might respond to patient rumination in ways that mitigate its generally negative interpersonal consequences. Therapists might, for instance, expect depressed patients to ruminate and be more likely to respond supportively. An alternative explanation is that the study did not find an association between rumination and working alliance because it assessed patients' self-reported, general tendency to ruminate and not their level of in-session rumination. Evaluating rumination observed in-session – the context in which rumination would affect the therapeutic relationship – could further clarify whether the negative interpersonal consequences of rumination extend to the therapeutic relationship.

**The Present Study**

The present study addressed the previously identified gaps in the rumination and psychotherapy literature. First, research was needed to clarify whether in-session rumination

predicts worse treatment outcomes to CBT for depression, the most widely-used form of evidence-based psychotherapy. Knowing whether in-session rumination predicts CBT outcomes could further our understanding of why some patients do not respond to CBT and/or indicate if ruminative patients merit specialized treatment. Second, rumination research has relied primarily on self-report measures to assess the construct. By adopting an observational approach, the present study aimed to introduce a means of measuring in-session rumination. This observational approach allows investigators to produce ecologically valid measurements of rumination, thereby, helping clinicians identify this clinically meaningful process and eliminating the effect of cognitive biases that can confound self-report measures. Measuring in-session rumination, an interpersonal process, also allowed for ecologically valid assessment of its relationship with the working alliance. To address these research questions, the present study implemented and evaluated an observational measure of in-session rumination occurring during sessions of CBT for depression. The specific aims of the study are described below.

**Specific Aims**

**Specific Aim One.** The first aim of this study was to establish the reliability of observational ratings of rumination during sessions of CBT for depression. Sessions were rated by undergraduate research assistants, who had demonstrated good reliability on calibration ratings of a different study's CBT therapy sessions that were used for training purposes. Sessions in the current study were rated by two teams of two raters.

Hypothesis 1: The intraclass correlation coefficients (*ICC)* between ratings of rumination will be at least .70. This hypothesis will be evaluated for both the intensity and duration metrics of in-session rumination.

**Specific Aim Two.** The second aim was to evaluate the associations between in-session rumination and depressive symptoms – including symptoms at the beginning of treatment and over the course of treatment (i.e., treatment outcome).

Hypothesis 2A: Meta-analytic evidence supports a positive, cross-sectional association between rumination and depressive symptoms (Aldao et al., 2010; Mor & Winquist, 2002; Olatunji et al., 2013); thus, it was hypothesized that intensity and duration of in-session rumination during session one would have a positive association with depressive symptoms at session one.

Hypothesis 2B: Based on Watkins' (2016) argument that traditional CBT for depression is ill-suited for ruminative patients, it was hypothesized that higher individual levels in intensity and duration of in-session rumination during session one would be associated with higher subsequent depressive symptoms.

Hypothesis 2C: Given Watkin's (2016) claim that CBT's cognitive interventions often fail ruminative patients, the current study also evaluated in-session rumination during patients' eighth therapy session, when they were likely to be actively engaged in cognitive interventions. It was hypothesized that individual differences in in-session rumination during session eight would be associated with higher subsequent depressive symptoms after controlling for prior changes in symptoms. This hypothesis was evaluated for both the intensity and duration of in-session rumination.

**Specific Aim Three.** The third aim of this study was to explore whether in-session rumination related to the quality of the therapeutic relationship as measured by both patient and therapist ratings of the working alliance.

Hypothesis 3A: Given that individuals who ruminate more report lower relationship satisfaction (Pearson, Watkins, Kuyken, & Mullan, 2010) and negative perceptions of support they receive (Aymanns, Filipp, & Klauer, 1995), it was hypothesized that higher intensity and duration of in-session rumination during session one would predict lower patient-reported working alliance at session two.

Hypothesis 3B: Given that ruminative individuals receive lower observer ratings of interpersonal functioning (Lam, Schuck, Smith, Farmer, & Checkley, 2003) and report less interest in active, problem-solving types of therapy (Addis & Carpenter, 1999), it was hypothesized that higher intensity and duration of in-session rumination during session eight, after the patient has been socialized to CBT, would have a negative association with therapist-rated working alliance at session eight.

## Method

### Study Overview

The current observational rating study is a secondary study of the Predictors of Remission in Depression to Individual and Combined Treatments (PReDICT) project and was initiated after the conclusion of the primary data collection. The PReDICT project was a randomized controlled trial aimed at identifying predictors and moderators of treatment response among patients who had never received treatment for MDD. Prior reports described the PReDICT study protocol, sample characteristics, and clinical outcomes. In brief, the study randomized patients 1:1:1 to one of three 12-week monotherapies: 1) escitalopram (ESC; 10-20 mg/d), a selective serotonin reuptake inhibitor; 2) duloxetine (DUL; 30-60 mg/d), a serotonin-norepinephrine reuptake inhibitor; or 3) cognitive behavior therapy (CBT; up to 16 one-hour individual sessions). Patients who *remitted* to their allocated 12-week monotherapy were

eligible to enter a 21-month maintenance treatment period, whereas, patients who did not remit to monotherapy were eligible for 12-weeks of combination treatment (i.e., antidepressants and CBT). Patients who *responded* to combination treatment were then eligible to enter an 18-month maintenance treatment period.

**Participants**

PReDICT participants eligible for the present study were patients who participated in at least one session of CBT monotherapy at an English-speaking clinic ($n$ = 76). Of the eligible patients, 63 (82.9%) had at least one working session recording available to be rated. Because the current study developed and implemented a new observational rating scheme, additional patients who received CBT as part of PReDICT at a separate, Spanish-speaking clinic (eligible $n$ = 29) were excluded. The rationale for this decision was that it was necessary to establish the reliability of the rating scheme in English before adapting it to another language. Importantly, to minimize the risk of sampling bias, the PReDICT study had separately randomized treatment allocation within the English- and Spanish-language clinics.

All study participants met DSM-IV-TR (APA, 2000) criteria for MDD and had a 17-item Hamilton Depression Rating Scale (HAM-D; Hamilton, 1967) score ≥18 at screening and ≥15 at their baseline visit. Exclusion criteria included prior treatment (lifetime) of a mood disorder (i.e., a marketed antidepressant at a minimum effective dose for four or more consecutive weeks or four or more sessions of an evidence-based and structured psychotherapy for depression); lifetime history of dementia, a primary psychotic disorder, bipolar disorder; or a current diagnosis (i.e., within the past year) of obsessive-compulsive disorder, an eating disorder, or dissociative disorder. Participants were also excluded if they met criteria for substance abuse in the past three months or substance dependence during the 12 months prior to their first treatment

visit. Trained clinicians and raters reliably completed all interviews and assessments.

All participants provided written informed consent. The Emory Institutional Review Board and the Grady Hospital Research Oversight Committee granted study approval, and the study was conducted in accordance with the 1975 Helsinki Declaration and its amendments. PReDICT data were gathered from participants during 2007-2015, and the observational ratings data for the current study were produced in 2019.

**PReDICT Procedure**

Patients were recruited primarily through advertising, and study eligibility was established via a clinical assessment that included a Structured Clinical Interview for DSM-IV (SCID; First et al., 1995), a psychiatrist's interview, several clinician-rated measures of symptom severity, self-report of demographic variables and family history of psychiatric diagnoses, and a physical medical exam. Patients deemed eligible for the study then completed a baseline assessment that included biological (e.g., venipuncture, neuroimaging), personality, and clinical measures. Patients were then randomized to the monotherapy treatment, and patients who agreed to participate returned at weeks 1 – 6, 8, 10, and 12 for assessment visits. These visits included symptom rating scales administered by trained raters masked to treatment assignment and patient self-reports. Patients received $5 for each assessment visit to offset travel-related expenses, and visits were scheduled on the same day as treatment when possible.

**CBT Treatment**

CBT was provided in a manner consistent with the standard CBT protocol (Beck et al., 1979), and the primary treatment targets were: 1) increasing activity levels for patients who were inactive; 2) challenging negative, situation-specific thoughts; and 3) challenging the dysfunctional thoughts and beliefs thought to underly a patient's depression. Recommended

therapeutic procedures included activity scheduling, behavioral exercises, self-monitoring focused on thoughts and cognitive distortions, and self-belief identification and cognitive restructuring. Masters and doctoral-level therapists implement the CBT with patients. Patients met with their therapist twice per week for the first four weeks and then weekly for the remaining eight weeks, though there was some flexibility in the timing of visits when necessary (e.g., vacation, holidays). All therapy sessions were video-recorded (if permitted by the patient), and supervision occurred weekly. Independent raters at the Beck Institute for Cognitive Therapy and the Academy of Cognitive Therapy watched a random subset of therapy sessions and rated therapist competency on the Cognitive Therapy Scale (Young & Beck, 1980). Therapists who received a score below 40, the usual cutoff for competency in CBT treatment studies, participated in additional training with their supervisor.

**Observational Rating Procedure**

**Rating scheme development.** Development of the rating system used in the current study occurred over a 6-month period from fall 2018 through spring of 2019. The first author (JK) developed the initial rating manual and method based on a review of the rumination and co-rumination literatures (See Appendix A), as well as prior work that clarified the relevant conceptual space (Treynor et al., 2003; Watkins, 2008). The rating scheme operationalized in-session rumination as a style or process of talking about problems that is: 1) negative, 2) passive (vs. solution-oriented), and 3) repetitive. To aid in the identification of in-session rumination, the rating manual also reviewed typical ruminative topics, such as dwelling on one's symptoms or speculating about the causes and consequences of one's problems (Nolen-Hoeksema, 1991; Rose, Schwartz-Mette, Glick, Smith, & Luebbe, 2014). Four undergraduate research assistants then completed pilot ratings with videos of CBT sessions from an earlier study conducted by our

clinical-research group (McGrath et al., 2013), and they provided feedback on the rating scheme and manual until the rating system was finalized (See Appendix B).

**Raters and training.** All raters were undergraduate-level research assistants who were unaware of patient outcomes or the hypotheses of the current study. Training began with didactic instruction and discussion of the rumination construct and the rating manual, including watching and discussing sessions with the first author. Raters then made practice ratings on their own, and the results were reviewed and discussed at weekly team meetings. Finally, raters produced independent ratings of an average of 25 videos that had also been rated by the first author. Raters were deemed ready to produce ratings for the current study when they demonstrated "good" reliability with the calibration ratings (*ICC* > .59; Cicchetti, 1994) produced by the first author. To ensure ongoing reliability and limit-rating drift during the study, weekly rating meetings were conducted to maintain alignment on the procedure and to discuss ambiguous or difficult-to-rate sessions; final scores for each rating were locked before these discussions.

**Rated sessions.** The current study rated patients' first and eighth CBT sessions. We selected the first session because it was likely to be less structured than other sessions, thereby, allowing for greater variability in rumination. Moreover, the current study aimed to evaluate if early-treatment in-session rumination predicted later treatment outcomes. We chose to rate patients' eighth therapy session to permit evaluation of in-session rumination during the middle of treatment when patients are actively practicing cognitive restructuring, an intervention thought to be ineffective with ruminative patients (Watkins, 2016).

Out of the 76 participants who participated in their *first* therapy session (i.e., session 1), 57 (75.0%) had a session recording that was rated. Seventeen participants (22.4%) were missing

this session's recording, and 2 (2.6%) had recordings that lasted for less than one minute. Of the 62 eligible participants who participated in their *eighth* therapy session, 45 (72.6%) had a recording that was rated. Thirteen participants (21.0%) lacked session 8 recordings, and 4 (6.5%) recordings did not work (i.e., the DVD would not play the recording).

**Session assignment and rating procedure.** To improve the reliability of ratings, all sessions were double rated by teams of research assistants. This approach is often used in observational studies of psychotherapy (e.g., Hill, O'Grady, & Elkin, 1992; McLeod, Smith, Southam-Gerow, Weisz, & Kendall, 2015). One team rated patients' first session, and the other team rated patients' eighth session. The order in which the sessions were rated by each team was random (i.e., participants were not rated in the order in which they entered the study). To minimize risk of rater inattention, raters produced ratings every 10 minutes for the first 40 minutes of each session. Raters were instructed to watch each 10-minute segment of video in its entirety before producing ratings for that segment, and they were encouraged to take notes while watching each segment. Raters could watch the segments of the therapy sessions as many times as they judged they needed to do before finalizing their ratings.

## Observational Measures

**In-session rumination – intensity.** This rating scheme was developed for the current study and informed by prior work that: coded rumination in narratives (Liu, 2015), and assessed rumination during clinical interviews and periods of naturalistic observation (Nelson & Mazure, 1985). For each of the observed therapy segments, raters appraised the patient's behavior on a four-point scale (0 = *no in-session rumination* to 3 = *severe in-session rumination*). The scale assessed the intensity of in-session rumination, with more intense ratings defined as: repetitive and passive negative speech from which the patient seems to have trouble disengaging (e.g.,

ignoring changes of topics); and, a chain of thinking that led from one negative topic to another negative topic (See Table 1 for summary of rating scheme). Ratings were produced for each individual 10-minute segment of therapy, and the maximum rating (i.e., the most intense rating) across all the segments was used as the datum for that session.

**In-session rumination - duration.** For each of the observed therapy segments, raters appraised the patient's behavior on a five-point scale (0 = *not at all* to 4 = *very much*) that represents the duration of time the patient spent ruminating during the observed segment. Anchors were provided for each rating point (e.g., a rating of 1 was endorsed for a patient who ruminated for up to a quarter of a time; a rating of 2 was endorsed for rumination that consumed up to half of the segment time, etc.). Ratings were made for each individual segment of therapy, and the average rating across the four segments was used as the datum for that session.

**Outcome Measures**

**Depressive symptoms**. The 17-item Hamilton Depression Rating Scale (HAM-D; Hamilton, 1967; Williams, 1988), a clinician-rated measure of depressive symptom severity over the past week, is one of the most commonly used measures in psychotherapy and antidepressant medication research related to MDD. Higher total scores indicate more severe depression; scores below 8 are within the normal range (or in clinical remission), and scores near 20 are generally required for entry into a treatment study. Depressive symptoms were also measured by patients' self-reported symptoms on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI is a widely-used, 21-item measure of self-reported depressive symptoms that occurred during the past two weeks, and its psychometric properties have been evaluated extensively (Beck, Steer, & Carbin, 1988). BDI items are rated from 0 to 3, and higher total scores indicate more severe depression. Depressive symptoms, as measured by

the HAM-D and BDI, were assessed at baseline and throughout treatment at weeks 1-6, 8, 10, and 12.

**Therapeutic relationship**. The Working Alliance Inventory short form (WAI; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989) is a 12-item self-report measure of the strength of the therapeutic relationship with versions specific for both clients (WAI-C) and therapists (WAI-T). Items are scored from 1-7, with higher scores indicating a stronger therapeutic alliance. Total scores, used in the current study, can be evaluated as a measure of the general therapeutic alliance (Tracey & Kokotovic, 1989). Studies have reported acceptable levels of reliability for WAI short form (Cronbach's $\alpha$'s > .90; Busseri & Tyler, 2003). Patient and therapist ratings of the working alliance were collected early in treatment (i.e., around the 2$^{nd}$ session), the middle of treatment (i.e., around the 8$^{th}$ session), and the end of treatment (i.e., near the 16th session).

**Data Analysis**

Preliminary analyses described the demographic and clinical characteristics of the study sample, and Chi-Square tests and Analysis of Variance (ANOVA) were used to compare eligible participants who did not have a recorded session to rate to those who did have one. Descriptive statistics were also calculated to summarize the incidence and distribution of in-session rumination. To assess the reliability of the observational measures, intraclass correlation coefficients (*ICC*; Shrout & Fleiss, 1979) with absolute agreement produced an estimate of the ratio of true score variance to total variance. These correlations provided a reliability estimate of the mean scores of the rating teams considered as a whole, and they allowed for generalizability of the results to other samples.

Linear mixed models were used to evaluate the relationship between in-session rumination at the beginning of treatment and depression symptoms. Time was entered as a continuous predictor, and the model included individual-level random effects for both intercept and slope. In-session rumination during session one was evaluated as a predictor of individual differences in intercept (i.e., initial symptoms) and slope (i.e., changes in depression symptoms during treatment). Regression analyses, controlling for changes in depression symptoms prior to session eight, were employed to evaluate the relationship between session eight in-session rumination and depressive symptoms at the end of treatment.

Regression analyses were used to explore the relationship between in-session rumination and the working alliance. First, the proposed negative association between in-session rumination during session one and patient-rated working alliance early in treatment was evaluated. Second, the hypothesized negative association between in-session rumination observed during session eight and therapist-rated working alliance in the middle of treatment was evaluated.

All analyses were conducted at a statistical significance of $p < .05$ (2-tailed), unless otherwise noted. SPSS 25.0 was used for the analyses.

**Missing Data**

There were 208 (17%) missing outcome (i.e., HAM-D or BDI) data points out of a total of 1260 possible data points to be used in the mixed models. The majority (60%, HAM-D; 57%, BDI) of participants had complete data, less than a quarter (22%) dropped out of the study before week 12, and the remainder (17%, HAM-D; 21%, BDI) missed at least one of the individual assessments before completing the study. The mixed models used all available data to generate parameter estimates via maximum likelihood estimation, which outperforms multiple imputation on longitudinal data (Twisk, 2019). In addition, parameter estimates based on all available data

were compared to estimates from participants with complete data, and the results were consistent. Estimates from all available data are reported in the results section.

For the regression analyses predicting end of treatment (i.e., week 12) depression symptoms, there were a maximum of 14 (22%) patients without week 12 symptom ratings. These patients were less likely to be white, more likely to identify as Hispanic, and more likely to have a chronic depressive episode (>2 years) at study baseline. They also endorsed higher baseline BDI symptoms. These auxiliary variables were included in multiple imputation models that were used to generate full week 12 depression symptom datasets. Including these variables increased the plausibility that data were missing at random (Enders, 2010). Twenty imputed datasets were created for both the HAM-D and BDI, and primary analyses were completed on each dataset and then pooled to create the final results.

## Results

### Sample Characteristics

Of the 76 patients eligible for the current study, 63 (82.9%) had at least one session recording that was rated. These 63 participants did not differ on any of the demographic or clinical variables from the 13 eligible patients who did not have a video to be rated. The 63 participants had a mean age of 40.1 years (*SD* = 11.7) and 52.4% were female. Participants' reported race was 74.6% Caucasian, 11.1% African American, and 14.3% other. Reported ethnicity was 6.3% Hispanic and 93.7% Non-Hispanic. Less than half of participants (44.4%) were married or cohabitating and 54.8% were employed full-time. Slightly over 41% had a comorbid anxiety disorder at study entry, 28.3% had a history of more than 3 previous Major Depressive Episodes, and 41.7% had a chronic depressive disorder (i.e., duration of current episode $\geq$ 2 years) at study entry. Baseline depressive symptoms were in the moderate range for

both the HAM-D (*M* = 18.7, *SD* = 3.4) and BDI (*M* = 21.2; *SD* = 7.6). Table 2 describes the sample.

**Description of Observational Ratings**

Fifty-seven first sessions were rated. The in-session rumination *intensity* ratings for session one included all the possible levels of intensity and were well distributed across them (21.1%, None; 45.1%, Mild; 28.1%, Moderate; and 8.8%, Severe). The *duration* ratings for session one ranged from no in-session rumination (0) to up to half of the session time (2); (*M* = 0.71, *SD* = 0.51). Forty-five eighth sessions were rated. The *intensity* ratings for session eight included all the possible levels of intensity and were well distributed across them (26.7%, None; 40.0%, Mild; 31.1%, Moderate; and 2.2%, Severe). The *duration* ratings for session eight ranged from no in-session rumination (0) to over half of the session time (2.38); (*M* = 0.70; *SD* = 0.52). Collectively, these results showed that approximately 30% of patients exhibited a clear presence of in-session rumination (i.e., an intensity rating of 2 or more). Moreover, the results indicated that there was enough variability in the ratings to evaluate interrater reliability.

**Interrater Reliability**

ICCs were calculated to evaluate the reliability of the ratings of in-session rumination intensity and duration during session one and session eight. The *ICC*s were estimated for the averaged ratings using two-way random effects models with absolute agreement (model (2,2), Shrout & Fleiss, 1979). Each *ICC* was then evaluated relative to established guidelines (Cicchetti, 1994). Reliability for both session one ratings were in the "excellent" range (*ICC*s > 0.75*)*; the *ICC*s were 0.84 for in-session rumination *intensity* and 0.81 for in-session rumination *duration*. Reliability for both session eight ratings were in the "good" range (*ICC*s > .60); the *ICC*s were 0.69 for in-session rumination *intensity* and 0.73 for *duration*. These results indicated

the observational ratings were sufficiently reliable to be used in the subsequent analyses.

**Predicting Depressive Symptoms – Session One Ratings**

A series of linear mixed models evaluated the relationship between in-session rumination observed during session one and depressive symptoms. An initial model fit a linear growth curve to clinician-rated depressive symptoms on the HAM-D and allowed for individual-level random effects for intercepts (i.e., initial depressive symptoms) and slopes (i.e., change in depressive symptoms over time). This model indicated there was significant variability in intercepts and slopes, so rumination was then evaluated as a potential predictor of these between-subject differences. Contrary to the hypothesized relationships between in-session rumination and initial depressive symptoms, neither session one intensity nor duration predicted differences in HAM-D intercepts (both *p'*s > .36). Consistent with hypotheses about the relationship between in-session rumination during session one and subsequent depressive symptoms, session-one rumination intensity predicted individual differences in HAM-D slopes, $b = 0.24$ (95% CI [0.03, 0.44]), $p = .023$. Session-one duration also predicted differences in HAM-D slopes at a trend level, $b = 0.33$ (95% CI [-0.01, 0.67]), $p = .054$. These results indicated that higher in-session rumination observed during session one did not correlate with initial clinician-rated depressive symptoms but did predict higher symptoms throughout treatment.

The next model fit a linear growth curve to patient-reported depressive symptoms on the BDI and allowed for individual-level random effects for intercepts and slopes. This initial model indicated there was significant variability in intercepts, but not slopes. Thus, random slopes were dropped from the model, and session one in-session rumination was evaluated as a predictor of differences in intercepts. Consistent with hypotheses about the relationship between in-session rumination and initial depressive symptoms, rumination intensity predicted individual

differences in BDI intercepts, $b$ = 2.71 (95% CI [0.34, 5.08]), $p$ = .026. However, duration did not predict differences in BDI intercepts, $b$ = 3.48 (95% CI [-0.49, 7.46]), $p$ = .085. These results provided preliminary support for a cross-sectional relationship between in-session rumination intensity observed during session one and initial self-reported depressive symptoms.

Since the BDI linear growth model did not detect significant variability in slopes, regression models were used as alternative method to evaluate the relationship between in-session rumination and symptoms later in treatment. Specifically, the models evaluated if in-session rumination during session one predicted BDI symptoms at the end of treatment. Data were imputed for 13 participants who had dropped out of treatment before week 12. Neither rumination intensity nor duration was statistically associated with BDI symptoms at the end of treatment (intensity, $b$ = 1.33 (95% CI [-1.96, 4.62]), $p$ = .429; duration, $b$ = 1.21 (95% CI [-4.17, 6.59]), $p$ = .660). These results indicated that in-session rumination observed during session one did not predict self-reported depressive symptoms at the end of treatment.

**Predicting Depressive Symptoms – Session 8 Ratings**

A series of regression models evaluated the relationship between session eight in-session rumination and end of treatment depressive symptoms. These models evaluated the effect of in-session rumination after controlling for the relationship between change in depressive symptoms from the beginning of treatment to session eight. In terms of the relationship between in-session rumination and end of treatment HAM-D ratings, including imputed data for 4 subjects without week 12 data, both in-session rumination intensity and duration predicted higher symptoms at the end of treatment (intensity, $b$ = 3.32 (95% CI [0.57, 6.08]), $p$ = .018; duration, $b$ = 5.10 (95% CI [1.41, 8.79]), $p$ = .007). These results provided consistent evidence that higher in-session rumination observed during session eight predicted higher HAM-D symptoms at the end of

treatment. In terms of the relationship between in-session rumination and end of treatment BDI symptoms, including imputed data for 4 subjects without week 12 data, neither in-session rumination intensity or duration had a statistically significant relationship with week 12 symptoms (intensity, $b$ = 2.29 (95% CI [-1.55, 6.13]), $p$ = .242; duration, $b$ = 3.66 (95% CI [-1.64, 8.95]), $p$ = .176). These results indicated that in-session rumination observed during session eight was not associated with BDI symptoms at the end of treatment.

**Predicting Working Alliance**

Regression analyses evaluated the relationship between in-session rumination and working alliance. The proposed negative associations between session one in-session rumination and client's ratings of the working alliance early in treatment were not statistically significant for either in-session rumination intensity or duration (intensity, $b$ = -1.63 (95% CI [-4.91, 1.65]), $p$ = .322; duration, $b$ = -3.44 (95% CI [-8.82, 1.93]), $p$ = .204). Also, the proposed negative association between session eight in-session rumination and therapist-rated working alliance in the middle of treatment (e.g., after session eight) were not statistically significant (intensity, $b$ = -0.53 (95% CI [-3.49, 2.42]), $p$ = .718; duration, $b$ = -0.95 (95% CI [-5.05, 3.14]), $p$ = .641). These results indicated that in-session rumination was not statistically related to either client- or therapist-ratings of the working alliance.

## Discussion

The current study evaluated a new observational measure of in-session rumination as it occurs during CBT for depression. The measure was developed following a review of the rumination and co-rumination literatures (See Appendix A), and it built on considerable prior research that used self-report measures to establish relevant correlates (e.g., Aldao et al., 2010) and refine the conceptualization and measurement of rumination (e.g., Treynor et al., 2003). Our

measure operationalized in-session rumination as patients talking about problems in a way that is negative, passive (vs. solution- or action-oriented), and repetitive. It also incorporated common ruminative topics, such as dwelling on one's symptoms, rehashing the details of one's problems, or speculating about the causes and consequences of one's problems (Nolen-Hoeksema, 1991; Rose et al., 2014). A team of two trained undergraduates produced ratings of both the intensity and duration of in-session rumination that occurred during patients' first therapy session, and another equally-trained team produced ratings for patients' eighth session.

Results of the current study supported the reliability of the observational ratings of in-session rumination (See Appendix C for summary of study results). All of the ratings were in the "good" to "excellent" range of reliability according to established standards (Cicchetti, 1994). This is the first study to rate rumination within the context of psychotherapy, and the obtained results were consistent with prior studies that have produced reliable observational ratings of rumination (Nelson & Mazure, 1985; Nolen-Hoeksema et al., 1997) and co-rumination (Rose et al., 2014) in other settings. Having a reliable measure of in-session rumination provides preliminary guidance to clinicians on how to identify this meaningful clinical process that related to clinical outcomes. This, in turn, may allow clinicians to select interventions appropriate for rumination and create in-vivo opportunities for patients to practice using them. In addition, a reliable observational measure of in-session rumination provides researchers an alternative to complete reliance on self-report measures that may be more susceptible to cognitive biases (Hawes et al., 2013), even though they provide more efficient assessment of patients' subjective experiences of rumination. Moreover, a reliable observational measure permits the evaluation of context-specific research questions that cannot be addressed by self-report, such as how the level of in-session rumination relates to treatment outcomes.

When evaluating the clinical relevance of the observational ratings, the current study found evidence of the hypothesized positive association between in-session rumination and subsequent depressive symptoms during and at the end of treatment. Specifically, more in-session rumination observed during patients' first therapy session predicted less HAM-D symptom improvement during treatment, and more in-session rumination observed during patients' eighth session predicted – after controlling for prior changes in symptoms – higher HAM-D symptoms at the end of treatment. These results concur with considerable longitudinal research showing that rumination predicts subsequent depressive symptoms (Abela & Hankin, 2011; Just & Alloy, 1997; Nolen-Hoeksema, 2000; Spinhoven, Drost, de Rooij, van Hemert, & Penninx, 2016). Moreover, they agree with prior treatment research which reported that higher self-reported rumination predicted worse treatment outcomes (Jones et al., 2008) and higher depressive symptoms at the end of treatment (Ciesla & Roberts, 2002; Schmaling et al., 2002; Teismann et al., 2008).

A plausible explanation for the finding that in-session rumination predicts poorer response to treatment is that CBT does not explicitly target rumination. Watkins (2016) has advocated this position, saying that traditional CBT targets two key depressogenic processes – negative thinking and behavioral avoidance – yet fails some patients because it does not target rumination – a third key process. Several interventions, including behavioral activation (BA; Martell, Dimidjian, & Herman-Dunn, 2010) and Rumination-Focused CBT (RFCBT; Watkins, 2016), do explicitly target rumination and provide guidance on how to address rumination in clinical practice. For instance, rumination may be conceptualized with patients as a behavior, and the therapist can assist patients in learning to identify it, its antecedents, and its consequences. Patients can then try alternative behaviors such as modifying the triggers of

rumination, shifting their thinking to a more concrete, problems-solving style, and redirecting attention when they notice they are ruminating. A recent study provides preliminary support for the incremental benefit of rumination-targeting interventions; it found that group RFCBT produced better HAM-D symptom improvement than group CBT in depressed outpatients (Hvenegaard et al., 2020). Further support comes from a recent meta-analysis, which found that rumination-targeting treatments produce reliable reductions in depressive symptoms and that these changes in depression correlate positively with reductions in repetitive negative thinking that characterizes rumination (Spinhoven et al., 2018). Collectively, these results illustrate how integrating rumination into treatment might improve patient outcomes.

Although in-session rumination consistently predicted subsequent clinician-rated HAM-D symptoms, it did not predict subsequent self-reported BDI symptoms. This finding differs from one prior treatment study that measured self-reported rumination and produced consistent results across self- and clinician-rated measures of depression (Jones et al., 2008). However, other CBT studies that assessed rumination have reported different results across measures (Schmaling et al., 2002; Teismann et al., 2008). There's also more general evidence of discrepancies across self- and clinician-rated measures in depression treatment studies (Vittengl et al., 2016).

One potential explanation for the results in the current study is that there are meaningful differences between the HAM-D and BDI. Prior studies that compared the two measures note that the HAM-D emphasizes behavior and somatic symptoms, whereas the BDI emphasizes psychological and subjective experiences of depression (Brown, Schulberg, & Madonia, 1995; Steer, Beck, Riskind, & Brown, 1987). It's also possible that method variance contributes to different results between measures. A recent study, for instance, found that the concordance

between the BDI and HAM-D was lower in the PReDICT sample, which was treatment naïve and presumably less experienced and accurate at completing self-report measures of depression, than in a sample of patients with extensive treatment history (Hershenberg et al., 2020). Relatedly, there's evidence that self-reported rumination contributes to discrepancies between self- and clinician-rated depressive symptoms (Carter, Frampton, Mulder, Luty, & Joyce, 2010). Despite the inconsistency of results across measures in the current study, accumulating evidence indicates that rumination predicts poorer response to CBT, suggesting that CBT interventions would benefit from integrating rumination into that treatment.

The current study also produced some evidence of a cross-sectional relationship between in-session rumination and depressive symptoms. Specifically, there was some evidence for the expected positive association between in-session rumination and initial BDI symptoms, though this effect was not detected for the HAM-D. This result is consistent with prior treatment studies that found a cross-sectional relationship between self-reported rumination and self-reported depressive symptoms at the beginning of treatment (Ciesla & Roberts, 2002; Jones et al., 2008; Schmaling et al., 2002; Teismann et al., 2008). Moreover, the current study is consistent with prior treatment studies that evaluated a baseline, cross-sectional relationship between self-reported rumination and clinician-rated HAM-D symptoms and did not find a statistically significant effect (Schmaling et al., 2002; Teismann et al., 2008). A potential explanation for the different results between measures in the current study is that, as a clinical trial, the PReDICT study required patients to have a minimum severity score on the HAM-D to qualify for participation. This selection procedure could truncate the distribution of HAM-D, but not BDI, symptoms at the beginning of treatment, reducing the variability in the data and the likelihood of detecting an effect. However, the current study included another clinical interview measure that

was not used for study admission, so post-hoc analyses of that measure could be used to compare the relationship of changes on that instrument to the HAM-D and BDI data. The results of the post-hoc analyses were consistent with the previously reported HAM-D/BDI relationships.[1] Thus, results from the current study suggest that real differences exist in how in-session rumination relates to clinical ratings vs. self-report of depression.

Finally, the current study did not find evidence of an association between in-session rumination and working alliance. The estimated effects were in the expected negative direction, but not statistically significant. These results differ from findings on the generally negative interpersonal consequence of rumination (Aymanns et al., 1995; Lam et al., 2003; Nolen-Hoeksema & Davis, 1999; Pearson et al., 2010) and from theoretical rationale as to why ruminative patients may strain the alliance with CBT therapists (Addis & Carpenter, 1999). However, the results are consistent with the one study that did not find a significant relationship when they evaluated the relationship between working alliance and self-reported rumination (Teismann et al., 2012). A possible explanation for the results of the current study is that the therapists in the current study were able to respond to in-session rumination in a way that mitigated any effects it may have had on the working alliance. Therapists may, for instance, expect many depressed patients to ruminate and thus, be able to respond compassionately.

**Limitations**

There are several limitations to the current study. First, the study introduced a new measure of in-session rumination, and it needs further construct validation. The measure was

[1] Specifically, post-hoc analyses employing the same statistical methods used in the primary analyses of the study were conducted on the Montgomery-Asberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979), and then compared to the HAM-D or the BDI-II findings. The MADRS results were essentially identical to those of the HAM-D (i.e., no cross-sectional relationship, but a consistent longitudinal one), indicating the HAM-D results are valid even though the distribution of initial symptom ratings was truncated.

developed based on a thorough review of the relevant literature and it possessed good face validity and interrater agreement. Moreover, the measure generally correlated with depressive symptoms as expected. That said, the empirical relationships between the observational measure, self-reported rumination, and self-reported co-rumination remain unknown, and establishing these relationships will be essential for further clarifying the construct tapped by this observational measure. It will be important to establish, for instance, if in-session rumination taps a more general tendency to engage in cognitive rumination (as measured by self-report) or a behavior more specific to interpersonal context of therapy. Second, the current study used two independent teams to separately rate session one and session eight, so the study was unable to compare reliabilities across sessions. Results were generally comparable between the session one and session eight ratings, however, suggesting that the ratings were reasonably consistent. Further, all raters were initially trained to high interrater reliabilities on both session one and session eight from a similar, prior CBT study. Finally, the study sample was treatment-naïve, which may limit the study's generalizability to individuals who are depressed and have failed prior treatments. The study sample also excluded Spanish-speaking PReDICT participants, so its generalizability to these patients is unknown.

**Future Research**

To address the limitations of the current study, future research would benefit from evaluating the association of our observational measure with self-reported rumination and co-rumination. This would clarify the extent to which in-session rumination taps rumination, generally considered an intrapersonal cognitive process, and co-rumination, an interpersonal process that occurs within social relationships. It's also possible that in-session rumination reflects behavior specific to the therapeutic context and may only modestly correlate with other

ruminative constructs. It would also be interesting to evaluate how this observational measure correlates with other clinical measures (e.g., anxiety), as doing so may help identify important patient subgroups (e.g., anxious depression) that merit more specialized treatment. Additionally, investigating how the observational measure relates to therapy process measures, such as therapist competence and patient engagement in treatment, would clarify if rumination hinders treatment by interfering with in-session processes. Research could also benefit from further refinement of this observational measure. Improving the scoring criteria, for instance, may lead to further advances in the standardization of the measure that would allow independent research teams to implement and evaluate its usefulness in additional studies. Finally, it would be intriguing to evaluate the relationship between patients' in-session rumination scores and the neural connectivity patterns detected by functional magnetic resonance imaging at pre-treatment baseline, which were collected as part of the PReDICT study (Dunlop et al., 2017).

**Conclusion**

The current study evaluated a new observational measure of in-session rumination, measuring the extent to which patients talked about their problems in a repetitive, negative, and passive way. Results indicated that the observational ratings were reliable and generally correlated with depressive symptoms as expected. Specifically, there was some evidence of a cross-sectional relationship between in-session rumination and self-reported symptoms at the beginning of treatment, and there was consistent evidence that higher levels of in-session rumination predicted higher levels of subsequent clinician-rated depressive symptoms during treatment. These results provide much-needed data on the impact of rumination on patient outcomes to CBT for depression, and they support further efforts to incorporate rumination-specific interventions into treatment.

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**Table 1.**

*Overview of in-session rumination intensity rating scheme*

| |
|---|
| Instructions: select the rating that best represents the intensity of in-session rumination |
| **0 = None:** No hint of repetitive and passive negative speech |
| **1 = Mild:** Hints of repetitive and passive negative speech |
| Passing mention of ruminative topic |
| Does not lead to chain of negative topics, examples, elaborations |
| Patient easily disengages |
| **2 = Moderate:** Clear presence of repetitive and passive negative speech |
| Sustained discussion of a ruminative topic |
| Chain of ruminative topics that are logically related (i.e., "for examples") |
| May include passing generalizations or use of extreme language (e.g., “always”) |
| Some difficulty talking about other topics (e.g., returns to topic without prompt) |
| **3 = Severe:** Highly repetitive and passive negative speech |
| Perseverative discussion of a ruminative topic (e.g., loses conversational “back and forth”) |
| Racing or circular chain of ruminative topics (e.g., repeating examples; loosely connected) |
| Prolonged generalizations or use of extreme language (e.g., "always") |
| Marked difficulty talking about other topics (e.g., interrupts to return to topic) |

*Note:* See rating manual (Appendix B) for more details on the rating scheme

**Table 2.**

*Demographic and clinical characteristics of participants*

| Characteristic | All participants (N = 63) | |
|---|---|---|
| | *M* | *SD* |
| Age (yrs) | 40.1 | 11.7 |
| Age at first episode (yrs) | 30.4 | 14.2 |
| Baseline HAM-D | 18.7 | 3.4 |
| Baseline BDI | 21.2 | 7.6 |
| | *n* | % |
| Sex | | |
| Female | 33 | 52.4 |
| Male | 30 | 47.6 |
| Race | | |
| Black | 7 | 11.1 |
| Other | 9 | 14.3 |
| White | 47 | 74.6 |
| Ethnicity | | |
| Hispanic | 4 | 6.3 |
| Non-Hispanic | 59 | 93.7 |
| Married/Cohabitating | | |
| Yes | 28 | 55.6 |
| No | 35 | 44.4 |
| Employed full-time | | |
| Yes | 34 | 45.2 |
| No | 28 | 54.8 |
| Anxiety disorder at baseline | | |
| Yes | 26 | 41.3 |
| No | 37 | 58.7 |
| Previous episodes | | |
| 1 | 35 | 58.3 |
| 2 | 8 | 13.3 |
| ≥3 | 17 | 28.3 |
| Chronic episode (≥ 2 yrs) | 25 | 41.7 |
| History of suicide attempt | 1 | 1.6 |
| Insurance status | | |
| Yes | 35 | 59.3 |
| No | 24 | 40.7 |

*Note: HAM-D = 17-item Hamilton Depression Rating scale; BDI = Beck Depression Inventory*

# Appendix A

Review of rumination and co-rumination literatures

## Introduction

Most clinicians have participated in therapy with a client who ruminates, "going round and round the same thoughts… getting stuck in an upsetting groove" (Watkins, 2016, p. 311). These clients *repeatedly* talk about the same negative topics, such as self-criticisms, upsetting events and unresolved concerns, the causes and consequences of their problems, and their symptoms (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Watkins, 2016). They focus on thinking or talking about their concerns rather than changing their thinking or behavior. During sessions, clients might ruminate when therapists try to explore their thinking (e.g., "what thought was going through your mind?"), or they might insist on talking about a ruminative topic or be reminded of one during the therapy session interactions – even if it's tangentially relevant. These exchanges create challenges for clinicians because these clients want the exchanges to occur (Addis & Carpenter, 1999) and believe they produce insight (Watkins & Baracaia, 2001). Sensing that these topics are important to clients, clinicians may willingly participate in them. Alternatively, clinicians may accidently or unwillingly follow clients into the "upsetting groove." Understanding the consequences of these clinical decisions is critical, as rumination is a core feature of major depressive disorder (MDD) (American Psychiatric Association, 2013) and resembles the repetitive thinking found in other presenting clinical problems (Ehring & Watkins, 2008).

The rumination literature suggests that in-session ruminative exchanges have meaningful consequences for treatment. Considerable basic research implicates rumination as a process that maintains psychological suffering (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Mor &

Winquist, 2002; Olatunji, Naragon-Gainey, & Wolitzky-Taylor, 2013), indicating that in-session rumination perpetuates client distress. Moreover, most gold-standard treatments, including Cognitive Behavior Therapy (CBT; Beck et al., 1979), do not explicitly target rumination, leading some researchers (e.g., Watkins, 2016) to argue that established treatments often fail ruminative clients. Since in-session rumination unfolds between clients and therapists, it might also affect the therapeutic relationship (i.e., working alliance), a known predictor of treatment outcomes (Flückiger, Del Re, Wampold, & Horvath, 2018) and buffer against treatment dropout (Sharf, Primavera, & Diener, 2010). Indeed, some studies find that rumination influences interpersonal outcomes, such as reduced social support (for a brief discussion see: Nolen-Hoeksema et al., 2008). These findings from the rumination literature shed some light on the potential consequences of in-session rumination over the course of psychotherapeutic interventions.

The co-rumination literature supplements the rumination literature and provides further insight into the potential consequences of in-session rumination. Co-rumination originated in developmental psychology research regarding friendship processes, and it refers to the social manifestation of rumination and an extreme and negatively focused form of self-disclosure (Rose, 2002). More specifically, co-rumination denotes excessively talking about problems within a social relationship, and it is characterized by spending considerable time talking about problems; repeatedly rehashing problems; encouraging continued problem talk; speculating about causes, consequences, and meanings of problems; and dwelling on negative affect. Evidence shows that co-rumination correlates positively depressive symptoms (e.g., Spendelow, Simonds, & Avery, 2017), further indicating that in-session rumination maintains client distress. Interestingly – and in contrast to findings in the rumination literature – co-rumination generally

contributes to *better* interpersonal outcomes (e.g., higher relationship satisfaction among friends; Rose, 2002). This finding suggests that in-session rumination might strengthen the working alliance. As an interpersonal construct, co-rumination complements the rumination literature and enhances our understanding of the potential consequences of rumination that occurs during therapy.

**The Present Review**

This paper aims to explore the potential consequences of in-session rumination and to describe therapeutic ways to respond to it. We chose to introduce the term in-session rumination to signify any ruminative speech that occurs during therapy. We chose not to use the term "rumination" because prior research conceptualized rumination as an *intrapersonal,* cognitive process, making unclear its generalizability to in-session rumination, an *interpersonal* process. Moreover, we elected not to use co-rumination because it has been conceptualized as a reciprocal interpersonal process that occurs within close social relationships (e.g., friends). Although we felt hesitant to introduce a new term, we concluded that it was imprecise to use the existing ones (i.e., "jangle fallacy"; Thorndike, 1904).

We undertook this review for two reasons. First, though there are many relevant reviews (Lyubomirsky, Layous, Chancellor, & Nelson, 2015; Mennin & Fresco, 2013; Nolen-Hoeksema et al., 2008; Olatunji, Naragon-Gainey, & Wolitzky-Taylor, 2013; Spinhoven et al., 2018; Watkins, 2008), they have not addressed the consequences in-session rumination. Moreover, the few papers that have discussed treatment (Mennin & Fresco, 2013; Spinhoven et al., 2018) have not discussed whether rumination is adequalty addressed by established treatments nor have they explored considerations relevant to the therapeutic process or relationship. Second, no existing reviews have concurrently analyzed the rumination and co-rumination literatures. By integrating

both literatures, this paper aims to contribute to research efforts that simultaneously focus on intrapersonal and interpersonal perspectives of psychopathology (e.g., Hofmann, 2014; Marroquín, 2011) and that combine therapy process and treatment-specific research (e.g., Castonguay et al., 1996).

Although there are differing conceptualizations of rumination (for discussions see: Samtani & Moulds, 2017; Smith & Alloy, 2009; Watkins, 2008), the current review follows Nolen-Hoeksema's (1991) definition of rumination, often referred to as depressive rumination. This conceptualization has served as the foundation of most rumination research, and it was a primary influence on the development of the co-rumination construct. This review also emphasizes treatment implications relevant to depression because clinical research on rumination and co-rumination has been primarily investigated within the context of major depressive disorder (MDD). It is plausible, however, that the implications discussed in this paper could be extended to other processes, like worry and reassurance seeking, that are relevant to other forms of psychopathology (e.g., GAD, OCD) and that may manifest in an interpersonal context – including the therapeutic relationship.

This paper comprises six sections. The first section reviews conceptual background, and the next section summarizes basic research regarding the link between rumination, co-rumination, and depressive symptoms. The third section reviews treatment research while the fourth covers basic research on interpersonal outcomes relevant to rumination and co-rumination. The fifth section reviews relevant studies of the working alliance. Each section includes subsections on rumination, co-rumination, and a summary that recaps the findings and integrates the literatures. Finally, the sixth and concluding section presents an integrative summary, suggestions for future research, and concluding remarks.

## Conceptual Background

**Rumination.** Within Nolen-Hoeksema's Response Styles Theory, rumination refers to a maladaptive way of responding to one's distress that includes "repetitively focusing on the fact that one is depressed; on one's symptoms of depression; and on the causes, meanings, and consequences of depressive symptoms" (Nolen-Hoeksema, 1991, p. 569). Rumination begins as an attempt to explain one's current mood or distress (e.g., "why is this happening to me?" or "what does this mean?") and typically expands to become a repetitive, somewhat uncontrollable chain of thoughts about other problems, self-blame and criticism, or emotions (Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Morrow & Nolen-Hoeksema, 1990). Although rumination shares characteristics, like negative valence, with other depressogenic cognitive variables (e.g., negative automatic thoughts; Beck et al., 1979), rumination is characterized by its typical content (e.g., causes and consequences of depression) and also by a *style* that is repetitive and passive (Nolen-Hoeksema et al., 2008), as well as abstract, evaluative, and overgeneralized (Watkins, 2008).

Nolen-Hoeksema and Morrow (1991) conducted one of the first investigations of rumination. Fortuitously, they assessed a group of participants shortly before the 1989 Loma Prieta earthquake in California and subsequently monitored the participants' functioning in the months following the disaster. The study found that individuals who scored high on the rumination subscale of the Response Styles Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991), which measures one's self-reported tendency to engage in ruminative behaviors during periods of distress (e.g., "think about how sad you feel" or think "why do I always react this way?"), reported higher depressive symptoms following the disaster than they had prior to it.

Since this early study, rumination has emerged as a process that is thought to exacerbate and prolongs distress, to such an extent that it is viewed as a risk factor for the development and maintenance of depression (Nolen-Hoeksema, 1991). Ruminating prolongs distress because it involves trying to make sense of one's personal thoughts, feelings, or experiences during periods of dysphoric mood (Nolen-Hoeksema et al., 2008). This occurs while negatively biased information is increasingly coming online and more readily accessible, thereby, influencing information processing in ways that perpetuate negative mood (e.g., Gotlib & Joormann, 2010). Moreover, ruminating interferes with effective behavior, including solving problems, connecting directly with positive experiences, and considering alternative interpretations of situations (Nolen-Hoeksema et al., 2008; Watkins, 2008). Rumination seems to occur in an automatic, habitual manner outside conscious awareness (Watkins & Nolen-Hoeksema, 2014) making it difficult to disengage from the process and, consequently, suggesting that rumination might require interventions that target it.

**Co-Rumination.** Rose (2002) introduced co-rumination as part of her research into the costs and benefits of different friendship processes, and she conceptualized it as the social manifestation of rumination and as an extreme and negatively focused form of self-disclosure. Rumination, as previously discussed, refers to the *intrapersonal* process of repetitively and passively thinking about one's problems and distress (Nolen-Hoeksema, 1991). Self-disclosure, on the other hand, refers to the *interpersonal* process of revealing and discussing personal information, thoughts, and feelings with another person (Jourard, 1964). It is generally considered adaptive and contributes to positive outcomes like increased interpersonal attraction (Collins & Miller, 1994). Based on her review of the rumination and self-disclosure literatures, Rose (2002) theorized that co-rumination would produce an "adjustment trade-off" whereby it

contributes to both positive and negative outcomes through its shared characteristics with self-disclosure and rumination, respectively. Specifically, she hypothesized that co-rumination has a positive association with both relationship quality (i.e., a positive outcome) and internalizing symptoms (i.e., a negative outcome).

Rose (2002) first evaluated her "adjustment trade-off" model in a cross-sectional study of child and adolescent same-sex best friends. The study measured co-rumination with the Co-Rumination Questionnaire (CRQ; Rose, 2002), which assesses the extent to which participants co-ruminate with their best friend. Example items include, "when we talk about a problem that one of us has, we try to figure out every one of the bad things that might happen" and "when we talk about a problem… we'll talk about every part of the problem over and over." Consistent with the proposed model, the study found that self-reported co-rumination had a positive association with both self-reported friendship quality and internalizing symptoms. Rose and colleagues found additional support for the "trade-off" model in subsequent work with children and adolescents, including a longitudinal study (Rose, Carlson, & Waller, 2007) and an observational coding study (Rose, Schwartz-Mette, Glick, Smith, & Luebbe, 2014).

**Summary.** Rumination refers to the intrapersonal process of repetitively and passively thinking about one's problems and distress, particularly during periods of dysphoric mood. It prolongs distress by interacting with mood-driven cognitive biases (e.g., recalling negative memories) and interfering with effective behavior (e.g., problem-solving; connecting with positive experiences). Co-rumination produces similar depressogenic consequences. However, as an interpersonal process that shares characteristics with self-disclosure (i.e., sharing one's thoughts and feelings with another person), it also contributes to positive interpersonal outcomes (e.g., better friendship quality). Together, the rumination and co-rumination literatures suggests

that in-session rumination might produce costs (e.g., prolonging depressive symptoms) and benefits (e.g., improving the therapeutic relationship/alliance).

## Basic Research: Depressive Symptoms

**Rumination.** Substantial evidence indicates that self-reported rumination contributes to the etiology and maintenance of depression. Several meta-analyses support a positive association between rumination and depressive symptoms in both clinical and non-clinical samples (Aldao et al., 2010; Mor & Winquist, 2002; Olatunji et al., 2013). Moreover, longitudinal studies show that, after controlling for baseline depressive symptoms, self-reported rumination predicts the onset and recurrence of depressive episodes (Abela & Hankin, 2011; Just & Alloy, 1997; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007; Spinhoven et al., 2016). Experience sampling research shows that rumination and negative affect interact over time to produce progressively worsening mood (Moberly & Watkins, 2008). Interestingly, the relationship between self-reported rumination and depression symptoms appears particularly pronounced for certain, "brooding" items on the RSQ, such as "what am I doing to deserve this?" and "why can't I handle things better?" (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). These negatively valenced items focus on abstract, difficult-to-answer questions and comparisons with unachieved standards. In contrast, more neutrally valenced, "reflective" RSQ items about actively pondering and trying to understand things (e.g., "analyze recent events…") predict fewer future symptoms.

Experimental evidence provides additional support for rumination's depressogenic effects. In 1993, Nolen-Hoeksema and Marrow introduced the prototypical rumination experiment in which participants engage in a rumination or distraction task for eight minutes. The rumination task asked participants to fixate on items related to the meanings, causes, and

consequences of their current feelings (e.g., “think about the level of motivation you feel right now”), and the distraction task asked participants to focus on non-self-related topics (e.g., “visualize clouds forming in the sky”). Using this paradigm, studies found that inducing rumination versus distraction during periods of sadness produced a range of effects, including exacerbating negative mood (e.g., Nolen-Hoeksema & Morrow, 1993), increasing negative thinking (e.g., Lyubomirsky & Nolen-Hoeksema, 1995), and reducing the specificity of autobiographical memory (e.g., Watkins & Teasdale, 2001).

**Co-Rumination.** Considerable evidence supports the relationship of co-rumination to internalizing symptoms in non-clinical samples. A meta-analysis (Spendelow et al., 2017), based on 28 studies with 12,829 community-based participants, found a small to moderate positive association between co-rumination and internalizing symptoms. This meta-analysis also found that the association was consistent across different age groups, and the positive association was slightly stronger for females and when evaluated relative to a same-sex best friend (vs. other relationship types). Importantly, preliminary experimental evidence indicates that co-rumination produces internalizing symptoms. Zelic and collegues (2017) found that participants who interacted with a confederate who asked co-ruminative questions (e.g., discussed problems, their emotional impacts, and their potential causes and consequences) experienced more subsequent negative affect, sadness, and anxiety than participants who interacted with confederates asking problem-solving or distracting questions.

An observational coding study of adolescent friends provided further insight into how co-rumination affects emotional functioning (Rose et al., 2014). They found that the dwelling on negative affect aspect of co-rumination (i.e., focusing conversation on the experience of negative emotions) was most reliably related to internalizing symptoms. Similarly, the relationship

between self-reported co-rumination and depression symptoms was particularly pronounced for "co-brooding" items on the CRQ, such as, " when we talk about a problem… we try to figure out every one of the bad things that might happen" (Bastin, Bijttebier, Raes, & Vasey, 2014). These items emphasize passively discussing potential negative consequences of problems and dwelling on negative feelings. More "reflective" CRQ items that describe active attempts to understand a problem (e.g., "talk about reasons why [a problem] might have happened"), on the other hand, showed a negative relationship with depression symptoms.

Evidence also supports a positive association between co-rumination and clinical depression. One study found that co-rumination had a positive association with a history of MDD among children (Stone, Uhrlass, & Gibb, 2010), and another study found that co-rumination predicted the onset of depressive episodes, including first episodes, as well as their severity and duration (Stone, Hankin, Gibb, & Abela, 2011). This latter effect was maintained after controlling for initial depression severity and rumination, and co-rumination had a stronger association with future depression than did rumination. Evidence from experience sampling studies also implicates co-rumination in clinical depression. One study found that adolescents with MDD engaged in more co-rumination than healthy controls (Waller, Silk, Stone, & Dahl, 2014), and another found that talking about problems correlated with depressed mood in young adults with MDD who reported a high tendency to co-ruminate (Starr, 2015).

**Summary.** Considerable evidence implicates self-reported rumination as a process that correlates and predicts depressive symptoms in both non-clinical and clinical samples. In addition, numerous experimental studies demonstrate that rumination produces depressogenic effects (e.g., prolonged negative mood). Substantial evidence also indicates that co-rumination correlates with increased depressive symptoms. This research has primarily included non-

clinical youth samples (i.e., children, adolescents, and young adult). Emerging evidence, however, supports the generalizability of the depressogenic consequences of co-rumination to older and to clinical samples. In summary, research overwhelming indicates that rumination and co-rumination contribute to depressive symptoms, suggesting that in-session rumination might do the same – particularly if it focuses on negatively valenced, brooding and dwelling topics.

## Treatment Research

**Rumination.** Remarkably limited research investigates the relationship between rumination and treatment outcomes to Cognitive Behavior Therapy (CBT; Beck et al., 1979), one of the most widely-used form of evidence-based psychotherapy. CBT conceptualizes depression as resulting from depressogenic beliefs about the self, world, and future, and it targets depression by having clients increase rewarding activities (i.e., behavioral activation) and challenge negative thoughts and their underlying beliefs or schema. CBT does not explicitly target repetitive thought processes like rumination, leading some researchers to argue that CBT is ill-suited for ruminative clients. Watkins (2016, p. 17), for instance, claims that CBT's approach of challenging individual thoughts often fails when addressing an intense, habitual stream of negative thoughts (i.e., rumination), and he describes this clinical experience as, "trying to catch a waterfall one drop at time." He also mentions that thought challenging can trigger further rumination, such as when a client dwells on the intervention (e.g., "why can't I do this correctly?") or uses it to speculate on the causes, meanings, and implications of their symptoms.

Despite the compelling rationale for evaluating how rumination relates to treatment outcomes in CBT for depression, only a few studies have done so. Two studies showed that pre-treatment rumination predicted worse clinical outcomes including lower likelihood of remission of MDD (Jones, Siegle, & Thase, 2008) and higher levels of depressive symptoms at the end of

treatment (Teismann, Willutzki, Michalak, & Schulte, 2008). It's worth noting, however, that at least one study has found that baseline rumination did not predict pre- to post-treatment symptom change (Carter et al., 2011). Studies of CBT-informed psychotherapies that include interventions other than behavioral activation and cognitive restructuring (e.g., relaxation; assertiveness; problem-solving) also show that rumination predicts higher post-treatment depression symptoms (Ciesla & Roberts, 2002; Schmaling, Dimidjian, Katon, & Sullivan, 2002). Collectively, these results suggest that rumination might explain why some patients improve less than others during CBT for depression.

In addition to functioning as an component of CBT for depression, Behavioral Activation (BA) is also a standalone, evidence-based treatment for depression (for meta-analysis see: Cuijpers, van Straten, & Warmerdam, 2007). One prominent approach to BA (Martell, Dimidjian, & Herman-Dunn, 2010) explicitly assesses the function of rumination and helps patients implement alterative behaviors. Suggested interventions include highlighting the negative consequences of rumination, defining a concrete problem and taking steps to solve it, and using attention in new ways (e.g., attending to sensory experiences; distracting from rumination). No studies have, to our knowledge, evaluated the relationship between rumination and outcomes to BA, though, this is likely a valuable direction for future research.

Several newer interventions also explicitly target rumination during treatment. Rumination-Focused Cognitive Behavior Therapy (RFCBT; Watkins, 2016), for instance, draws from BA approaches and conceptualizes rumination as a behavior developed and maintained by negative reinforcement (e.g., escaping unpleasant events by turning attention inward; avoiding risk of failure by not acting). RFCBT teaches patients to identify the triggers and consequences of rumination and to practice active, concrete ways of coping (e.g., problem-solving; behavioral

activation). Metacognitive Therapy (MCT; Wells, 2009) also targets rumination and stresses the importance of modifying beliefs that maintain it (e.g., "if I keep thinking about my symptoms, I won't miss anything important"). Both RFCBT and MCT also target rumination with mindfulness practices, as does Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002). Finally, some interventions use experimental tasks, such as working memory and attention exercises, to alter the biological mechanisms thought to underlie rumination (e.g., De Raedt & Koster, 2010; Siegle, Ghinassi, & Thase, 2007). Collectively, these treatments explicitly conceptualize rumination with clients, and they use interventions that increase client awareness of rumination and help them develop alternative responses to it.

A recent meta-analysis provides preliminary evidence for the efficacy of these rumination-focused treatments (Spinhoven et al., 2018). The meta-analysis found that, relative to a variety of control conditions (e.g., antidepressant medications; yoga; light therapy), rumination-focused interventions effectively reduced depressive symptoms at a rate and level consistent with more established forms of psychotherapy (e.g., CBT). In addition, the interventions produced a medium-sized reduction in rumination, and this effect correlated significantly with reductions in depressive symptoms. The authors interpreted these results as preliminary evidence that changes in rumination mediate changes in depressive symptoms; however, the meta-analysis did not evaluate the temporal sequencing of changes in these variables, so additional research needs to establish the causal relationship between them.

**Co-Rumination.** Only a few researchers have commented on the implications of co-rumination for treatment. Rose (2002), for instance, speculated that children and adolescents who tend to co-ruminate may seem well-functioning since use social support – a generally adaptive resource – even though they may be doing so in a maladaptive way. An implication of

this hypothesis is that clinicians need to attend to *how* their clients discuss problems within their social network to determine if they are doing so in a helpful or unhelpful way (e.g., talking about problems and distress over and over without transitioning to cognitive or behavioral change). Relatedly, Stone and colleagues (2011) noted that co-rumination might be particularly problematic because it is socially rewarding (i.e., improves relationships quality), which results in their continuation of co-rumination in the future (see Rose et al., 2007 for longitudinal data consistent with this effect). Thus, clients may have relationships that perpetuate unhelpful behaviors – and ultimately, their depression. This may be particularly relevant for female clients, who – on average – endorse higher rates of co-rumination (Spendelow et al., 2017). Clinicians addressing these social issues may benefit from using empirically-supported, interpersonal approaches to therapy (e.g., IPT; Klerman, Weissman, Rounsaville, & Chevron, 1984), which help clients develop healthier interpersonal behaviors and relationships (e.g., processing the emotions of a breakup and developing new attachment supports).

Since psychotherapy is a dyadic process that involves self-disclosure and discussion of problems (Farber, 2003), it is plausible, even likely, that co-rumination occurs between clients and therapists. Indeed, several clinical researchers (Martell et al., 2010; Watkins, 2016) advise therapists to be wary of ruminating with their clients during treatment (i.e., repeatedly talking about problems instead of intervening). We prefer to call this process "in-session rumination" since the literature generally conceptualizes co-rumination as a reciprocal process that occurs in close social relationship (e.g., friends). Nevertheless, co-rumination research provides potential guidance to clinicians working with ruminative clients. Observational research indicates, for example, that certain responses (e.g., asking a question; saying something supportive; acknowledging the speaker has been heard) can reinforce co-rumination (Rose et al., 2014),

suggesting that clinicians need to be deliberate in how they respond to in-session rumination. Using reflections that emphasize concrete, specifics aspects of the triggering problem or available client resources (Bolton, 1979; Miller & Rollnick, 2013), might be one way of responding supportively while also encouraging problem-solving rather than continued rumination. Interventions such from rumination-targeted treatments (e.g., BA; RFCBT) might also prove useful.

**Summary.** The rumination literature provides some guidance on how to target rumination in treatment. CBT for depression, which uses cognitive restructuring, does not explicitly target rumination and seems less effective for ruminative patients. Other treatments (e.g., BA; RFCBT) do explicitly target rumination by helping clients increase their awareness of the rumination process and find alternative ways to respond it; preliminary evidence supports the efficacy of these treatments. Researchers have only speculated as to how co-rumination might affect treatment, stressing that clinicians need to assess if clients co-ruminate in their social relationships since doing so would perpetuate their distress. In sum, the treatment literature highlights the importance of helping clients learn to identify when they ruminate – in their thinking and in their relationships – and to develop alterative behaviors. Intervening on in-session rumination creates an opportunity for clinicians to increase client awareness of their ruminative tendencies and to help them practice alternative adaptive responses.

**Basic Research: Interpersonal Outcomes**

**Rumination.** Investigations of the interpersonal correlates of rumination find that higher levels of rumination generally correlate positively with *worse* interpersonal outcomes. For example, rumination predicts lower self-reported relationship satisfaction (Pearson, Watkins, Kuyken, & Mullan, 2010) and correlates positively with lower levels of self-reported and

observer-rated interpersonal functioning (Lam, Schuck, Smith, Farmer, & Checkley, 2003). Ruminating individuals also report feeling less satisfied with the support they receive – regardless of the level (i.e., high vs. low) received (Aymanns, Filipp, & Klauer, 1995). They also report receiving less emotional support and having more contentious relationships (Nolen-Hoeksema & Davis, 1999), and they are less effective at solving hypothetical interpersonal problem (Lyubomirsky & Nolen-Hoeksema, 1995). Ruminating also negatively impacts how other people perceive the person who tends to ruminate (Schwartz & Thomas, 1995).

Researchers have offered potential explanations as to why rumination contributes to negative interpersonal outcomes. For example, Nolen-Hoeksema and Davis (1999) posited that people who ruminate might violate social norms about discussing distressing topics by talking about them excessively (i.e., co-ruminating). They also note that some members of their social network may be willing and able to discuss distressing topics, whereas others might not. Another perspective draws from interpersonal theories of depression (e.g., Coyne, 1976; Hammen, 1992; Joiner & Coyne, 1999), which postulated that depressed people elicit rejection, conflict, and stress in their relationships (e.g., Benazon & Coyne, 2000). Joiner (2000) for instance, hypothesized that rumination might be the "cognitive motor" that fuels some of the interpersonally counterproductive behaviors (e.g., excessive reassurance-seeking) common among clinically depressed individuals. These perspectives broaden the conceptualization of rumination, an intrapersonal process, by highlighting how it might also contribute to interpersonal processes.

**Co-Rumination.** Initial studies of co-rumination found that it correlated positively with self-reported relationship quality and closeness between child and adolescent same-sex best friends. Evidence indicates that this association also exists in young adults and other close

relationships. Calmes and Roberts (2008), for instance, found positive associations between college students' self-reported tendency to co-ruminate with their closest roommate, closest parent, romantic partner, and closest friend and their self-reported relationship quality with each relationship partner. Researchers have continued to extend co-rumination to other relationships, such as mothers and adolescents (Waller & Rose, 2010) and adult co-workers (Boren, 2013). Interestingly, an experimental study failed to find evidence that interacting with a co-ruminative confederate led to increased interpersonal liking and feelings of being heard (Zelic et al., 2017). Thus, the social benefits of co-rumination might only exist in established, close relationships or when the exchange is reciprocal. Additionally, the social benefits might only develop over prolonged and repeated contact.

When co-rumination does contribute to positive interpersonal outcomes it is thought to do so through its shared characteristics with self-disclosure (i.e., sharing one's thoughts and feelings with another person). Consistent with this hypothesis, Rose's (2002) initial study found that co-rumination's positive association with friendship outcomes was partially due to shared variance with self-disclosure. Other studies indicate that other aspects of co-rumination seem to contribute to positive interpersonal outcomes. Specifically, better outcomes seem to result from active efforts to gain insight into problems (e.g., talking about a problem over and over; speculating about their causes; encouraging continued discussion) and not from dwelling on the experience of negative emotions or potential negative consequences (Bastin, Vanhalst, Raes, & Bijttebier, 2018; Rose et al., 2014).

Although the co-rumination model emphasizes better interpersonal outcomes, there's some evidence that co-rumination might be associated with worse outcomes. For example, a longitudinal study of adolescents found a dynamic, escalating cycle among co-rumination,

interpersonal stress generation, and increasing internalizing symptoms (Hankin, Stone, & Wright, 2010). Co-rumination also predicts increases in depression and anxiety symptoms from one friend to another (Schwartz-Mette & Rose, 2012), as well as lower peer acceptance and smaller social network size (Tompkins, Hockett, Abraibesh, & Witt, 2011) and more emphatic distress (Smith & Rose, 2011). These results suggest that – in some contexts – co-rumination can produce interpersonal costs and relationship difficulties.

Researchers have offered several potential explanations for the negative interpersonal consequences of co-rumination. Co-rumination might, for instance, become interpersonally problematic when used excessively (i.e., for too long, too often, or too intensely) (Ames-Sikora, Donohue, & Tully, 2017). Excessive co-rumination could create a vicious downward cycle in which it produces interpersonal stress and emotional distress, which in turn lead to more co-rumination, stress, and distress (Hankin et al., 2010). Co-rumination might also become one-sided and no longer reciprocal. Particularly negative and brooding co-rumination might exacerbate interpersonal difficulties (Bastin et al., 2018). Furthermore, relationship partners might vary in their desire, willingness, or ability to co-ruminate, as hearing about someone else's distress might become distressing (Schwartz-Mette & Rose, 2012). Indeed, one study found evidence that, in some relationships, the social benefits of co-rumination only occurred for one member of the dyad (Rose, 2002). These observations suggests that co-rumination might function similarly to other normative social behaviors, such as reassurance seeking, that some people use excessively and that makes them vulnerable to depression, and co-rumination may elicit rejection, conflict, and stress in relationships (e.g., Coyne, 1976; Hammen, 1992; Joiner & Coyne, 1999).

**Summary.** Evidence indicates that higher levels of rumination correlate positively with worse interpersonal outcomes, such as lower relationship satisfaction. Co-rumination, on the other hand, often correlates with positive interpersonal outcomes in established social relationships. It seems to produce a positive outcome when it shares characteristics with self-disclosure and focuses on creating insight and understanding of problems. Importantly, evidence also suggests that – in some contexts – co-rumination is associated with worse interpersonal outcomes. Possible explanations for the negative social consequences of both rumination and co-rumination include the extent to which they are brooding or excessive as well as on the mutual willingness of both members of a relationship to participate in it. These findings suggest that the interpersonal consequences of in-session rumination would depend on its characteristics (e.g., excessive or not), as well as on the willingness of therapists to engage in it with clients.

## Working Alliance

**Rumination.** Only one study has evaluated the relationship between rumination and therapy working alliance (Teismann, Michalak, Willutzki, & Schulte, 2012). This study evaluated this relationship in depressed clients treated with CBT, and the researchers hypothesized that higher rumination predicted lower client- and therapist-ratings of the working alliance. The authors grounded their hypotheses in evidence of the negative interpersonal consequences of rumination (e.g., Nolen-Hoeksema & Davis, 1999). They further based their study on previous work demonstrating higher levels of rumination correlated positively with more negative attitudes and lower credibility ratings of therapy that focused on acting and solving problems when compared to therapy emphasizing insight and analysis (Addis & Carpenter, 1999). How therapists integrate these patient preferences into treatment likely affects

the working alliance, as agreement between clients and therapists about the rationale and tasks of therapy are fundamental components of the working alliance (Bordin, 1979).

Contrary to their hypotheses, the study failed to find an association between rumination and either client- or therapist-ratings of the working alliance (Teismann, Michalak, Willutzki, & Schulte, 2012). The authors interpreted their findings as indicating that therapists might respond to rumination in ways that mitigate its generally negative interpersonal consequences. Therapists might, for instance, expect depressed patients to ruminate and be more likely to respond supportively. They also might integrate the helpful, "reflective" characteristics of rumination in a way that facilitates action and problem-solving or explicitly discuss rumination (i.e., bring it into the session) and make addressing it an overt, agreed upon task of therapy. Alternatively, the study may have failed to find an association between rumination and working alliance because it assessed patients' self-reported, general tendency to ruminate and not their level of in-session rumination. Evaluating rumination observed in-session – the context in which rumination would affect the therapeutic relationship – could further clarify whether the negative interpersonal consequences of rumination extend to the therapeutic relationship.

**Co-Rumination.** No studies have evaluated how co-rumination might relate to the working alliance, though, it is possible to conjecture about the nature of the relationship. We speculate that therapists who explicitly assess and target unhelpful social behaviors, like co-rumination, might be able to strengthen the alliance. For instance, clinicians could strengthen the alliance by helping clients understand the depressogenic consequences of some of their social behaviors and develop alternatives behaviors that reduce their suffering and strengthen their relationships. Interventions from empirically-supported, interpersonal approaches to therapy

(e.g., Klerman, Weissman, Rounsaville, & Chevron, 1984), such as communication analysis, could help in these contexts.

Clients who tend to co-ruminate might also engage in such with their therapists. We maintain that this, in-session rumination would not technically constitute co-rumination because co-rumination occurs in established, close social relationships (e.g., friendships). This conceptual ambiguity notwithstanding, the co-rumination literature suggests way in which in-session rumination might affect the alliance. On one hand, the "adjustment trade-off" model (Rose, 2002) would suggest that in-session rumination between therapists and client could be socially rewarding (i.e., improve relationship quality). This effect could translate into therapists feeling pulled to participate in in-session rumination. On the other hand, the socially rewarding consequences of co-rumination might not generalize to therapy, similar to the situation with experimental participants who interacted with a confederate asking co-ruminative questions (Zelic et al., 2017). Thus, it is unclear if rumination occurring during therapy would affect the alliance. If it does, it may only do so only after repeated and prolonged contact such as occurs with longer-term therapy.

**Summary.** Researchers hypothesized that rumination predicted lower ratings of the working alliance – particularly in therapies that emphasize action and problem-solving as versus insight and discussion, which share characteristics with rumination. However, no evidence supported this position. Thus, behaviorally-oriented therapists might be able to integrate rumination into treatment in ways that do not hurt the alliance (e.g., tap the helpful, "reflective" aspects of it). No extant research has investigated co-rumination and the working alliance. We suspect that therapists who directly assess and intervene on potentially unhelpful social processes, like co-rumination, might strengthen the therapeutic alliance. Together, the

rumination and co-rumination literatures provide limited guidance as to how in-session rumination might affect the alliance, though hypotheses regarding this relationship constitute intriguing questions for future research.

**In-Session Rumination: An Integrative Summary**

This paper introduced "in-session rumination" as a term for any ruminative speech that occurs during therapy. In-session rumination can occur when clients share their thoughts (e.g., numerous negative memories or a laundry list of self-criticisms) or talk about distressing situations in their lives (e.g., an unpleasant social interaction). The former resembles rumination, an *intrapersonal* process of repetitively *thinking* about the negative aspects of one's distress and problems (Nolen-Hoeksema et al., 2008; Watkins, 2008), whereas the latter process shares characteristics with co-rumination, an *interpersonal* process of repetitively *talking* about negative topics within social relationships (Rose, 2002). We chose not to use the term rumination due to the interpersonal nature of in-session rumination. Moreover, we elected not to use co-rumination because it occurs within reciprocal, close social relationships (e.g., friends). That said, by integrating the rumination and co-rumination literatures, this paper explored the potential consequences of in-session rumination and espoused possible ways to respond to in-session rumination. We summarize these points below.

First, research indicates that in-session rumination perpetuates depressive symptoms. Both rumination and co-rumination, for example, predict more depressive symptoms (e.g., Nolen-Hoeksema, 2000; Rose et al., 2007) and produce worse mood (e.g., Nolen-Hoeksema & Morrow, 1993; Zelic et al., 2017), suggesting that in-session rumination would do the same. In-session rumination might create these effects because it involves clients trying to make sense of their thoughts, feelings, or experiences during periods of dysphoric mood (Nolen-Hoeksema et

al., 2008). This occurs when negatively biased information influences information processing in ways that perpetuate negative mood (e.g., Gotlib & Joormann, 2010). Moreover, in-session rumination might consume valuable session time and interfere with clients making the cognitive or behavioral changes necessary to reduce their suffering. In-session rumination characterized by brooding or dwelling on negative emotions seems particularly depressogenic, whereas more reflective rumination does not (Bastin et al., 2014; Rose et al., 2014; Treynor et al., 2003; Watkins, 2008). Clinicians would benefit from learning to discriminate these types of rumination, so they can facilitate clients doing so during therapy sessions.

Second, the treatment literature provides some guidance regarding how to respond to in-session rumination. Since ruminative patients suffer worse outcomes with CBT (e.g., Jones et al., 2008), clinicians need to consider using interventions other than cognitive restructuring with ruminative clients. BA-based approaches, for instance, involve explicitly conceptualizing rumination as a behavior with clients and coaching them to learn to identify it, its antecedents, and its consequences (Martell et al., 2010; Watkins, 2016). Then clients can try alternative behaviors, including modifying the triggers of rumination; shifting their thinking from abstractions to a more concrete, problems-solving style (i.e., productive reflection); and using flexible and focused attention (i.e., mindfulness) to refocus on tasks or become absorbed in non-cognitive, sensory experiences. Challenging beliefs that maintain rumination might also help (Wells, 2009). Supplementing the aforementioned approaches with interpersonally-oriented interventions (e.g., Klerman et al., 1984) would be appropriate when in-session rumination reflects a more general interpersonal communication style (i.e., co-rumination). By explicitly targeting in-session rumination, clinicians can help clients identify their ruminative tendencies

and practice alternative behaviors that ultimately generalize to their thoughts and conversations outside of therapy.

Finally, the rumination and co-rumination literatures provide a complicated picture of how in-session rumination might relate to the therapeutic working alliance. Rumination and co-rumination generally correlate negatively and positively, respectively, with interpersonal outcomes (see Calmes & Roberts, 2008; Nolen-Hoeksema & Davis, 1999), suggesting that the relationship between in-session rumination and the working alliance depends on *contextual* factors. Consistent with interpersonal theories of depression (e.g., Coyne, 1976; Hammen, 1992; Joiner & Coyne, 1999), the relationship might be negative when in-session rumination is particularly negative (i.e., brooding or dwelling) or excessive (i.e., continues for too long, too often, or too intensely), as this scenario would be particularly depressogenic for clients and unpleasant for clinicians. Alternatively, since ruminative clients want to explore and understand their problems (e.g., Addis & Carpenter, 1999; Watkins & Baracaia, 2001), clinicians might strengthen the alliance by harnessing the productive, reflective aspects of in-session rumination or by making it an explicit target of treatment. Understanding how in-session rumination affects the working alliance has potential and important implications for treatment since the alliance predicts client outcomes (Flückiger et al., 2018) and buffers against treatment dropout (Sharf et al., 2010).

**Future Directions.** This review revealed several potential areas for additional research. One would be to further evaluate the efficacy of rumination-targeting treatments and interventions. A recent study, for instance, found that RFCBT outperformed traditional CBT in treating depression (Hvenegaard et al., 2020). Replicating this study, as well as comparing CBT with other treatments (e.g., BA) in studies that assess in-session rumination would provide

important clinical guidance to providers working with ruminative patients. Experimental work evaluating the efficacy of individual interventions (e.g., mindfulness vs. cognitive restructuring) for reducing rumination would be helpful, as would finding ways to integrate the assessment and treatment of in-session rumination into rumination-targeting treatments.

Another potential area of research could profitably evaluate the contextual factors that moderate the interpersonal consequences of rumination and co-rumination. Researchers could accomplish this by evaluating interpersonal outcomes in additional relationship types (e.g., spouses; adult friends), assessing the perspectives of both members of relationships, and including clinical participants, who might exhibit more excessive ruminative behaviors. This research could reconcile the negative interpersonal outcomes documented in the rumination literature (e.g., Nolen-Hoeksema & Davis, 1999) with the generally positive ones documented in the co-rumination literature (e.g., Calmes & Roberts, 2008). Such research could also contribute an explanation of why co-rumination sometimes strengthens relationships (e.g., Rose, 2002) and other times stresses them (e.g., Hankin et al., 2010).

Finally, the field would benefit from the development of observational measure of in-session rumination. An in-session observational measure would help clinicians identify and assess in-session rumination, which would facilitate selection of most appropriate and personalized interventions while providing in-vivo opportunities for clients to practice them. Moreover, using an observational measure of in-session rumination to predict treatment outcomes would eliminate the shared method variance that confounds many studies (e.g., using self-reported rumination to predict self-reported symptoms). Observational measures would also allow an ecologically valid exploration of the relationship between in-session rumination and the working alliance.

## Concluding Comments

In-session rumination, introduced in this review, refers to rumination expressed during therapy. In-session rumination can reflect clients' thinking (i.e., rumination) or it can resemble more of a social, conversational process (i.e., co-rumination). By integrating both the rumination and co-rumination literatures, this review explored the potential consequences of in-session rumination and outlined ways to respond to it. The analyses of the relevant literatures signaled that in-session rumination – particularly when characterized as brooding or dwelling – would perpetuate client distress. The review also found evidence that standard CBT for depression, which uses cognitive restructuring, might fail some patients when used to treat in-session rumination, suggesting that clinicians might benefit from learning interventions that explicitly target rumination (e.g., BA; RFCBT). The review also explored the implications of in-session rumination for the working alliance. In sum, in-session rumination is a clinically meaningful process that clinicians can use to help clients learn to identify their ruminative tendencies and to then practice alternative responses. This in-vivo practice prepares clients to extrapolate these skills to their non-therapy, everyday thoughts and conversations.

# Appendix B

In-session rumination rating manual

## Background

Rumination refers to a way of responding to one's mood or distress that involves, "repetitively and passively focusing symptoms of distress and on the possible causes and consequences of these symptoms… [rumination] does not lead to active [problem] solving to change circumstances surrounding these symptoms. Instead, people who ruminate remain fixated on their problems and on their feelings about them without acting" (Nolen-Hoeksema et al., 2008, p. 400). This definition highlights three key characteristics of rumination: 1) negative (e.g., problem-focused; symptom focused); 2) repetitive (vs. being purely defined by the content of the thoughts or discussion); and 3) passive (vs. an active attitude aimed at acting or problem solving).

Ed Watkins, a leading rumination scholar, describes rumination as, "repeated and recurrent thinking about the self, past upsetting events, unresolved concerns, and symptoms... often characterized by evaluative thinking, with patients making negative comparisons between themselves and others ("Why do I have problems other people don't have?"), between their current state and desired state ("Why can't I get better?"), and between the current self and past self ("Why can't I work as well as before?")." People who tend to ruminate may do so because they think it will help them gain insight into the meanings of their feelings and problems; help them draw connections between problems; discern why things happened; or make sense of unpleasant memories or experiences. Example ruminative thoughts include, "why don't I feel like doing anything?"; "why did this happen to me?"; and "I wish things had gone differently." Ruminative processes may begin as an attempt to describe or explain one's current mood, distress, or problem and then expand to become a repetitive, somewhat uncontrollable chain of thoughts about other problems, self-blame and criticism, or emotions (Lyubomirksy et al., 1999; Morrow & Nolen-Hoeksema, 1990). Rumination often relates to themes of loss (e.g., via fate, personal failure, or the failure of others), and potential synonyms for rumination include brooding, being preoccupied, overthinking, dwelling, obsessing, or being "stuck" on a topic.

Substantial evidence shows that rumination contributes to numerous psychological problems, including the etiology and maintenance of depression (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Based these findings, there is increasing interest in rumination as a process that might affect how patients respond to psychotherapy. The aim of the current study is to investigate the treatment implications of rumination by developing and implementing an observational measure of rumination observed during psychotherapy sessions. Although rumination is generally considered an intrapersonal variable (i.e., an internal, cognitive process), the focus of the current study is on rumination as observable in patient's verbal behavior (i.e., what they say during the therapy session). We refer to this construct as "in-session rumination."

## Overview of Rating Procedure

In the current study, Raters will watch video recordings of a therapy session and rate the *intensity* and *duration* of in-session rumination. Ratings will be made every ten minutes for the

first forty minutes of the session. Raters are to watch each ten-minute segment of video in its entirety before assigning ratings and they are encouraged to take notes while watching the video. Raters are especially encouraged to note the timing (e.g., 5 minutes into the session) and content (e.g., financial problems) of potential periods of in-session rumination. Raters may watch the therapy session as many times as needed. If a session (or recording) ends before forty minutes have elapsed, then only make ratings for the segments that were ten minutes long and report the session to the study supervisor (JK).

Before making ratings for the current study, all Raters will complete a training procedure that includes learning about the rumination construct, reading the Rating Manual, and making practice ratings until they meet reliability criteria. Once Raters are sufficiently trained then they can begin rating sessions for the current study. To ensure ongoing reliability and limit rating drift during the study, weekly rating meetings will be held to maintain alignment on the procedure and to discuss ambiguous or difficult-to-rate sessions; final scores will be locked in prior to these discussions.

**Rumination – Background Information**

Rating in the current study aims to be descriptive (i.e., what occurs in the session) and does not aim to be evaluative (i.e., how well the therapy is going). Thus, the Rater's task is to search for evidence of in-session rumination, based on the definitions provided below, and minimize inferences about the patient or therapy process.

**Key Characteristics of Rumination.** In the current study, rumination refers to when a patient talks about problems in a way that is negative, repetitive, and passive.

The negative characteristic of in-session rumination can refer to the content of the conversation. Examples of negative content include loneliness, conflict, failure, difficulty making progress, self-judgements, and negative experiences (e.g., health or financial problems; depression). Negativity may also be seen in the patient's emotional state (i.e., experiencing or expressing negative, "unpleasant" emotions like sadness or anger).

The repetitive characteristic of in-session rumination can manifest in many ways, including talking about something over and over again; continuing to talk about something after having provided sufficient detail; going round and round and saying the same thing; over-analyzing; arguing or justifying something; and/or seeming preoccupied, fixated, or stuck on a topic. Moreover, rumination can be about one topic, related topics, or more loosely related topics that might or might not share a common theme or association (e.g., examples of personal failure).

The passive characteristic of in-session rumination means that the person who is ruminating is not focused on solving their problems and might seem hopeless, unmotivated, or unwilling to act. Moreover, the person may act in a way that suggests that their situation is uncontrollable. This can be contrasted with a more active attitude, meaning the patient is preparing to act and/or address a problem (e.g., brainstorming solutions, deciding, planning, considering new perspectives, etc.).

Other characteristics that are not necessary to identify in-session rumination but that often characterize it include: difficulty with concentration or attention; psychomotor activity (e.g., agitation), changes in mood or affect (e.g., sadness, pessimism, apprehension).

**Typical Ruminative Content.** Given that rumination is primarily defined by its negative, repetitive, and passive nature, Raters are to primarily focus on the patient's style of conversation (i.e., *how* they discuss things) vs. the content of the conversation (i.e., *what* they discuss). That said, a general overview of the types of content that often constitute a ruminative topic of conversation are reviewed below. This overview aims to assist in the identification of rumination, but the topics of conversation are by no means mutually exclusive, nor exhaustive. Thus, this coding scheme relies on Raters exercising their best judgement in identifying rumination based on their understanding of the construct.

**Rehashing problems.** Talking about a problem (or parts of the problem) repeatedly and passively. Can manifest many ways, including:

- Providing excessive details about a problem
- Continually restating the problem in the same words or different ones
- Remembering past problems, examples, or events related to the problem ("for examples")
- Trying to draw connections between problems, events, memories
- Arguing or justifying that something is problematic

***Example.***

> Patient: I'm so bad at managing my money. I try to budget my expenses but it's so hard for me to say no to one of my kids when they want something. I remember how my son wanted a video game, so I bought it for him and then we didn't have money for his doctor's appointment. Another time I hosted a party for my friend when I needed to save my money for an upcoming bill. My sister won't even listen to me talk about financial problems because I am relatively well-off compared to her. Last time she came over she told me that I have nothing to complain about because of how nice my house is…

**Speculating about problems**. Pondering the causes and consequences of a problem or situation in a repetitive and passive way. Can manifest many ways, including:

- Speculating about the origins of a problem or situation (e.g., why someone did something) or what bad things may happen because of the problem or situation
- Considering the meanings or implications of a problem or situation
- Trying to understand the problem or parts of the problem that are not understood (e.g., analyzing repeatedly)
- Trying to make sense of unpleasant memories or experiences
- Making extended negative comparisons between themselves and others (e.g., "Why do I have problems other people don't have?), their current state and desired state (e.g., "Why can't I get better?"), and their current self and past self (e.g., "Why can't I work as well as before?")
- Asking "why" questions that can be difficult or impossible to answer

***Example 1.***

Patient: What did I do to deserve this? Why can't I handle things better? I don't understand why I let things get to me like this... I don't think other people react in the same way.

***Example 2.***

Patient: I can't believe I lost my job. Now my wife is going to be even angrier with me, and my kids are going to have to change schools. This is another example of how I fail to handle my responsibilities. I bet it happened because I wasn't buddy buddy with my manager. Or maybe it's because I didn't go to as many company events as I should have…

***Example 3.***

Patient: I wonder why my significant other cancelled our dinner plans at the last minute. I mean, maybe he doesn't want to spend time with me? He has been distant for several weeks and seems to care more about work than me. He has several trips scheduled for work in the coming weeks, and I bet he won't even miss me.

**Dwelling on negative affect or symptoms.** Refers to talking excessively about the experience of unpleasant emotions (e.g., sad, depressed, nervous, worried, irritable, guilty) or symptoms (e.g., feeling tired, having trouble concentrating, sleeping problems, appetite changes, etc.). Note that dwelling refers to when someone is repetitively and passively *talking* about unpleasant emotional states or symptoms, not when they are experiencing or expressing them. That said, it is possible – and probable – that someone will experience an unpleasant emotion or depressive symptom when talking about it (e.g., a person cries when talking about how sad they feel.).

***Example.***

Patient: I can't believe this is happening… I feel so hopeless. I'm so tired and can't think about this any longer. It's so frustrating to feel this down and to not happy like everyone else. If only I were my old self, feeling better and spending time with friends instead of at home alone all of the time.

**Encouraging problem talk.** Refers to efforts the patient takes to keep the problem talk going instead of talking about other things. Can manifest in a number of ways, including:

- Ignoring therapist's efforts to change the topic of conversation
- Refusing to talk about other things
- Connecting an unrelated topic back to a ruminative topic
- Returning to a ruminative topic again after the topic of conversation has changed or without a prompt to do so

***Example.***

Patient: I know we've already talked about this and that we have other things to discuss, but I can't stop thinking about my girlfriend. As I said earlier, I just

don't know if I want to stay in a relationship with her… I like spending time with her but I don't know if she's the one for me in the long-term…

**Rating In-Session Rumination**

Raters will rate both the *intensity* and *duration* of in-session rumination. Guidelines for making each of these ratings are provided below. The rating sheets used by Raters are included at the end of the manual.

**Intensity of In-Session Rumination.** The aim of this coding scheme is to rate the intensity of patient's rumination based on the criteria below. This rating scheme is cumulative in that a patient may return to a ruminative topic that they had discussed in earlier in the session (e.g., in an earlier segment) and this may increase the severity of the rumination. Also, note that you are to select a rating that best represents the patient's rumination, so all criteria for a certain rating (e.g., severe) need not be met to justify that rating.

**0 = None:** no hint of repetitive and passive negative speech

**1 = Mild:** hints of repetitive and passive negative speech

- Passing mention of ruminative topic (e.g., rehashing, speculating, dwelling)
- Does not lead to chain of negative topics, examples, elaborations
- Patient easily disengages

**2 = Moderate:** clear presence of repetitive and passive negative speech

- Sustained discussion of a ruminative topic (e.g., rehashing, speculating, dwelling)
- Chain of ruminative topics that are logically related
    - "For examples"
- May include passing generalizations or use of extreme language (e.g., "always")
- Some difficulty talking about other topics
    - Returns to topic without prompt

**3 = Severe:** highly repetitive and passive negative speech

- Perseverative discussion of a ruminative topic (e.g., rehashing, speculating, dwelling)
    - Loses conversational "back and forth;" far removed from what prompted the discussion
- Racing or circular chain of ruminative topics
    - Repeating examples, memories, topics, etc.
    - Poorly connected and/or hard to follow
- Prolonged generalizations or use of extreme language (e.g., always)
- Marked difficulty talking about other topics
    - Interrupts therapist to return to discussing ruminative topic
    - Ignores attempts to change the topic of conversation
    - Refuses to discuss other topics

**Duration of Rumination.** The duration of patient rumination is to be rated using the following 5-point Likert scale; the scale is to be applied to the time observed (e.g., a 10-minute therapy segment). Please record when you believe periods of rumination begin and end on your rating sheet (e.g., "ruminating about family at 5 minutes") to inform your rating of duration.

**0 = Not at all:** The patient does not ruminate

**1 = A little:** The patient ruminates for up to a quarter of the time

**2 = A moderate amount:** The patient ruminates for up to half of the time

**3 = A lot:** The patient ruminates for up to three quarters of the time

**4 = Very much:** The patient ruminates for nearly all the time

**Additional Rating**

Raters are also asked to record if a patient self-identifies as a ruminator or worrier. This includes if they mention that they have a general tendency to ruminate or worry, as well as if they describe an example of ruminating or worrying.

**Additional Instructions for Raters**

1. RATE EVERY ITEM. The scoring sheets are designed so that every item is always rated. Thus, DO NOT LEAVE ANY ITEMS BLANK.

2. REFER TO THE MANUAL WHEN RATING. Because of the complexity of the coding scheme, it is essential that the rater be completely familiar with the information in the Manual. Moreover, it is important that the rater continually refer to the Manual, even after she/he has become familiar with it, to prevent subsequent Rater drift.

3. WATCH BEFORE RATING. Do not rate any of the items for a given therapy segment until the end of the segment, when you should pause the video and make your ratings.

4. TAKE NOTES. We recommend that the Rater take notes while watching the session. This procedure enhances the accuracy of ratings because it helps remind Raters of relevant information and keeps the rater focused on what is occurring in the session. In particular, it can be helpful to track the content and timing of potential periods of rumination (e.g., "patient ruminating about sister at 5 minutes into the session.").

5. FOCUS. Because rating psychotherapy videos requires focused attention, it is essential that the rater watch the session carefully. Moreover, the rater should not attempt to do other tasks while watching therapy sessions. Also, please take breaks between rating sessions to walk, get water, recharge, etc. – attending to therapy sessions is energy intensive, so rest ☺

6. USE SCORING SHEETS CORRECTLY. When using scoring sheets, it is important to write

your response in pencil and to avoid making any stray marks. It is crucial that Raters review their scoring sheets to ensure that the necessary identifying information is recorded, that every item is rated, and that no item is assigned more than one response. If you want to change your response, then erase your old response or cross it out before writing your new one.

7. AVOID HALOED RATINGS. The aim of this coding scheme is to describe rumination. To do this correctly, it is essential that the Raters rates what she/he observes, NOT what she/he thinks OUGHT to have occurred or MIGHT have occurred in the patient's head (i.e., their thinking). Moreover, the Raters must be also sure to apply the same standards of rating regardless of:

(1) what other behaviors the therapist engaged in during the session
(2) what ratings were given to other measures
(3) how skilled the rater believes the therapist to be
(4) how much the rater likes the therapist or patient
(5) whether the rater thinks the behavior being rated is helpful or not

## Reference Definitions

“Repetitively focusing on the fact that one is depressed; on one’ symptoms of depression; and on the causes, meaning, and consequences of depressive symptoms” (Nolen-Hoeksema, 2004, p.569).

“A mode of responding to distress that involves repetitively and passively focusing symptoms of distress and on the possible causes and consequences of these symptoms. Rumination does not lead to active solving to change circumstances surrounding these symptoms. Instead, people who are ruminating remain fixated on the problems and on their feelings about them without taking action” (Nolen-Hoeksema et al., 2008, p. 400).

“Recurrent and repetitive thinking about symptoms (e.g., fatigue, low mood), feelings, problems, upsetting events, and negative aspects of the self, typically with a focus on their causes, meanings, and implications” (Watkins, 2016, p.6). For example, “why did this happen to me?”; “why do I feel like this?”; “what went wrong?”; “why can’t I get things right?” (Watkins, 2016, p.8).”

“Persistent, recyclic, depressive thinking, is a relatively common response to negative moods (Rippere, 1977) and a salient cognitive feature of dysphoria and major depressive disorder. Examples of ruminative thoughts include: ‘‘why am I such a loser?’’, ‘‘my mood is so bad,’’ ‘‘why do I react so negatively?’’, ‘‘I just can’t cope with anything,’’ and ‘‘why don’t I feel like doing anything?’’ (Papageorgiou & Wells, 2004).”

“The tendency of the patient to dwell on one idea to the exclusion of other thoughts. In its milder forms the patient reports subjective preoccupation. With effort, the patient may be able to divert attention from these concerns. When ruminative thinking is more severe, patients are unable to divert themselves from these worries and the concern with this “fixed idea” becomes obvious in the patient’s verbal behavior. The thoughts become intrusive and the patient interrupts conversations to return to the preoccupation. At its most severe level, ruminative thoughts totally dominate the patient’s thinking.” (Nelson & Masure, 1985).

“What Is Rumination? Do you ever find yourself dwelling on a problem over and over again without getting anywhere? Do you spend a lot of time thinking about yourself and how you feel? Do you get stuck thinking over why you feel depressed or reviewing your failings and mistakes? Do you often worry about things? Are you often asking “Why me?” Do you find yourself recalling a series of negative memories, with each upsetting memory leading on to another sad memory? Are you constantly judging and evaluating yourself, checking up on how well you are doing things, focusing on where you don’t meet your expectations? All of these forms of repetitive thinking are what we call RUMINATION. Rumination involves going round and round the same thoughts in your mind—getting stuck in an upsetting groove” (Watkins, 2016, patient handout).

**Rating Coding Sheet**

**Segment 1 (0 – 10 mins)**

**Intensity (0 – 3):_____** **Duration (0-4):_____**

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**Segment 2 (10 – 20 mins)**

**Intensity (0 – 3):_____** **Duration (0-4):_____**

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**Segment 3 (20 – 30 mins)**

**Intensity (0 – 3):_____** **Duration (0-4):_____**

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**Segment 4 (30 – 40 mins)**

**Intensity (0 – 3):_____** **Duration (0-4):_____**

**Did the patient mention that they ruminate, worry, etc. (circle): Y or N?**

**If so, how did they describe it?**

## Appendix C – Results Summary

**Aim One.** Evaluate the reliability of observational ratings of in-session rumination

*Hypothesis 1: ICC*s of observational ratings will be at least .70

| Observational Measure | Session 1 Ratings | Session 8 Ratings |
|---|---|---|
| In-session rumination - Intensity | Supported | Supported |
| In-session rumination - Duration | Supported | Supported |

**Aim Two.** Predict depressive symptoms with observational ratings of in-session rumination

*Hypothesis 2A: Positive association between session 1 rumination and initial depressive symptoms*

| Observational Measure | HAM-D Symptoms | BDI Symptoms |
|---|---|---|
| In-session rumination - Intensity | Not Supported | Supported |
| In-session rumination - Duration | Not Supported | Partially Supported |

*Hypothesis 2B: Positive association between session 1 rumination and subsequent depressive symptoms (i.e., slope of symptom change during treatment for HAM-D; Week 12 symptoms for BDI)*

| Observational Measure | HAM-D Symptoms | BDI Symptoms |
|---|---|---|
| In-session rumination - Intensity | Supported | Not Supported |
| In-session rumination - Duration | Supported | Not Supported |

*Hypothesis 2C: Positive association between session 8 rumination and subsequent depressive symptoms (i.e., week 12 symptoms) - after controlling for prior change in symptoms*

| Observational Measure | HAM-D Symptoms | BDI Symptoms |
|---|---|---|
| In-session rumination - Intensity | Supported | Not Supported |
| In-session rumination - Duration | Supported | Not Supported |

**Aim Three.** Predict working alliance with observational ratings of in-session rumination

*Hypothesis 3A: Negative association between session 1 rumination and early client-rated working alliance*

| Observational Measure | Client-Rated WAI |
|---|---|
| In-session rumination - Intensity | Not Supported |
| In-session rumination - Duration | Not Supported |

*Hypothesis 3B: Positive association between session 8 rumination and middle of treatment therapist-rated working alliance*

| Observational Measure | Therapist-Rated WAI |
|---|---|
| In-session rumination - Intensity | Not Supported |
| In-session rumination - Duration | Not Supported |