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Levels of Depressed Mood and Low Interest for Two Years after Response to Cognitive Therapy for Recurrent Depression

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Abstract

Background: Major depressive disorder (MDD) involves depressed mood (high negative affect, predominantly) and low interest/pleasure (low positive affect). In past research, negative affect has improved more than positive affect during acute-phase antidepressant medication or cognitive therapy (CT). We extended this literature by differentiating depressed mood and two dimensions of low interest (general and sexual), assessing persistence of symptom differences after acute-phase CT response, and testing whether continuation treatment acted differently on depressed mood versus low interest.

Methods: We analyzed data from two randomized controlled trials. Patients with recurrent MDD first received acute-phase CT. Then, responders were randomized to 8-month continuation treatments and assessed for 16-24 additional months.

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Authors' Contributions. Jeffrey R. Vittengl: Conceptualization, Formal analysis, Writing - Original Draft, Writing - Review & Editing. Lee Anna Clark: Conceptualization, Writing - Review & Editing. Michael E. Thase: Writing - Review & Editing, Design and administration of Study 1 (Jarrett et al., 2013), Funding acquisition of Study 1. Robin B. Jarrett: Conceptualization, Writing - Review & Editing, Design and administration of Study 1 and 2 (Jarrett et al, 2001), Funding acquisition of Study 1 and 2.

Ethical Approval. This research was conducted in accordance with the ethical standards of the American Psychological Association, relevant institutional review boards, and Helsinki Declaration.

Informed Consent: All individual participants included in the study provided informed consent for assessment and treatment.

Results: Depressed mood and low general interest improved more than low sexual interest during acute-phase CT. Among responders, these symptom differences persisted for at least 2 years and were not changed by continuation CT or antidepressant medication.

Limitations: Generalization of findings to other patient populations and treatments is uncertain. Depressed mood and low interest scales were constructed from standard symptom measures and overlapped empirically.

Conclusions: Less improvement during CT, and persistent low sexual interest despite continuation treatment, highlights the need for MDD treatments more effectively targeting this positive affective symptom.

Keywords

depression; cognitive therapy; anhedonia; positive affect; negative affect; continuation treatment

Defining symptoms of major depressive disorder (MDD) include diminished interest or pleasure (low positive affect) and depressed mood (predominantly high negative affect; American Psychiatric Association, 2013; Clark & Watson, 1991; Mineka, Watson, & Clark, 1998). Recent research suggests that negative affect improves more than does positive affect during acute-phase treatment of MDD with antidepressant medication or cognitive therapy (CT; Dunn et al., 2020). However, the relative stability or change in symptom profiles after response to CT for MDD, and whether continuation-phase treatment affects specific symptoms differently, are largely unknown. In the current study, we aimed to (1) replicate past research showing that depressed mood improves more than low interest during acute-phase CT; and (2) extend the literature by testing (a) to what extent differences in depressed mood and low interest persist after response to acute-phase CT and (b) whether continuation treatment changes these symptoms to different extents.

Two broad affective systems central to depression have been differentiated (Clark & Watson, 1991, 2021). Negative and positive affectivity align with positive and negative valence systems referenced in the National Institute of Mental Health's Research Domain Criteria (Craske et al., 2016; Sanislow, 2016; but also see Watson, Stanton, & Clark, 2017) and encompass both stable temperament and changeable mood/affect states. Core aspects of positive and negative temperament include the propensity to experience corresponding affect. Negative affect includes emotional distress (e.g., fear, anger, anxiety) and positive affect includes pleasant activation (e.g., energy, enthusiasm, excitement). As a multi-symptom syndrome, MDD involves both high negative and low positive affectivity (Mineka et al., 1998).

Because MDD is often recurrent, treatment may be provided in phases (Bockting et al., 2015; Vittengl & Jarrett, 2014). Acute-phase treatment aims to decrease symptoms of a major depressive episode to produce response (e.g., no longer meet criteria for a major depressive episode) and remission (e.g., several weeks with minimal depressive symptoms). Continuation-or maintenance-phase treatment then promotes sustained remission and recovery (longer periods of no or few depressive symptoms) and helps prevent relapse or recurrence (return of symptoms at the intensity of a major depressive episode), particularly

among patients at greater risk (e.g., due to early age of MDD onset, history of more depressive episodes, unstable response or remission; Bockting et al., 2015; Vittengl & Jarrett, 2014).

Efficacious acute-phase treatments for MDD include CT, with symptom-reduction similar to antidepressant medication and superior to pill placebo (Cuijpers et al., 2014). Although acute-phase CT and antidepressant medication have roughly equal effect sizes, CT provides greater protection against relapse/recurrence after acute-phase treatment ends (Cuijpers et al., 2013). Similarly, continuation CT or antidepressant medication each reduce relapse/recurrence risk substantively compared to control groups (Biesheuvel-Leliefeld et al., 2015).

During acute-phase CT or antidepressant medication for MDD, scores on general depressive symptom scales decrease considerably, on average perhaps 1-3 *SD* (Craighead et al., 2015; Vittengl & Jarrett, 2014). These depressive symptom scales include the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960), Beck Depressive Inventory (BDI; Beck et al., 1961), and Inventory of Depressive Symptomatology--Self-report (IDS-SR; Rush et al., 1996), all usually scored by summing ratings across a broad range of affective (e.g., depressed mood, low interest/pleasure), behavioral (e.g., changes in sleep and eating), and cognitive (e.g., difficulty concentrating, suicidal ideation) symptoms.

However, when positive and negative affective symptoms are differentiated, improvements during MDD treatment may differ. In randomized controlled trials comparing acute-phase CT to antidepressant medication, negative affect improved (decreased about 1.4 *SD*) more than positive affect (increased 1.1-1.2 *SD;* Dunn et al., 2020). Differences in symptom changes did not vary significantly with CT versus medication. After acute-phase treatment, mean negative affect was normative whereas positive affect remained low. To what extent and how long differences in negative and positive affective symptoms persist after acute-phase treatment is unclear.

The current study addressed this question using data from two, multi-phase, randomized controlled trials. In the primary dataset (Jarrett et al., 2013), adult outpatients with recurrent MDD received acute-phase CT. Overall symptom reduction was about 1.7-1.9 *SD* during acute-phase CT (Vittengl et al., 2013). Responders were assessed for 32 total months after acute-phase CT. During the first 8 months after acute-phase CT, lower risk responders were only assessed, whereas higher risk responders were randomized to continuation-phase CT, fluoxetine, or pill placebo with clinical management. During the continuation phase, CT (18% of patients relapsed) or fluoxetine (18%) reduced relapse compared to pill placebo (33%; Jarrett et al., 2013). However, lower risk responders (5%) relapsed even less (Jarrett et al., 2016).

In the earlier dataset (Jarrett et al., 2001), used here for replication, adult outpatients with recurrent MDD received acute-phase CT, and mean symptom reduction was about 2.0-2.2 *SD* (Vittengl et al., 2005). Responders were assessed for 24 months after acute-phase CT, including 8 months continuation CT or assessment-only control. During the continuation phase, CT (10%) reduced relapse compared to only assessment (33%; Jarrett et al., 2001).

We used items from the HRSD, BDI, and IDS-SR to construct scales separating depressed mood from low interest. Although MDD diagnostic criteria do not differentiate facets of interest/pleasure (American Psychiatric Association, 2013), sexual interest may improve less than general interest during acute-phase treatment (Snippe et al., 2021). Accordingly, we analyzed general and sexual interest separately. In replication of past research, we hypothesized that depressed mood would improve more than low general and sexual interest during acute-phase CT. Extending past research, we explored the extent to which differences in depressed mood and low interest persisted after response to acute-phase CT, and whether continuation treatment acted differently on these symptoms. Because this post-CT analysis was novel, we considered it exploratory and did not test specific hypotheses.

Method

Data from two, separate randomized controlled trials were analyzed. We refer to the larger (Jarrett et al., 2013) and smaller (Jarrett et al., 2001) as the primary and replication datasets, respectively. Following we describe methods relevant to current analyses. Earlier publications contain additional detail (Jarrett et al., 2001; Jarrett et al., 2010; Jarrett et al., 2013). The trials were approved by institutional review boards at the University of Texas Southwestern Medical Center (both samples) and University of Pittsburgh Medical Center (primary sample).

Participants

Adult outpatients provided written informed consent for assessment and treatment, met criteria for recurrent MDD (American Psychiatric Association, 1994, 2000), and scored ≥ 14 (primary dataset) or ≥ 16 (replication dataset) on the 17-item HRSD (Hamilton, 1960). Diagnoses were made using the Structured Clinical Interview for *DSM* (primary dataset: First et al., 1996; replication dataset: Spitzer et al., 1989). Table 1 shows participant demographics.

Procedure

Acute phase.—All patients received CT (Beck et al., 1979) in a 12-week protocol. Psychotropic medication was not provided or permitted during the acute phase. Cognitive therapy targets both depressed mood (e.g., by identifying and modifying unrealistically negative thought processes) and low interest/ pleasure (e.g., with behavioral activation to facilitate engagement with sources of reinforcement). Therapists were doctoral-level clinicians who demonstrated competence in CT and received ongoing supervision. In the primary dataset (N = 523), patients received 16 or 20 CT sessions, with more sessions for patients with less early improvement. In the replication dataset (N = 156), patients received 20 CT sessions. Patients received two sessions/week for the first 4 or 8 weeks and then weekly sessions for the remainder of the 12-week acute phase, to total 16 or 20 sessions. Sessions lasted 50-60 minutes each.

Continuation phase.—Consenting acute-phase CT responders entered the 8-month continuation phase. In the primary sample, higher-risk responders (n = 241, no major depressive episode and the final acute-phase HRSD score ≤ 12, but one or more of the last

seven acute-phase HRSD scores ≥ 7) were randomized to 8 months of continuation CT, fluoxetine, or pill placebo with clinical management, whereas lower-risk responders (n = 49, no major depressive episode and the last seven acute-phase HRSD scores all ≤ 6) were only assessed. In the replication sample, responders (n = 84, no major depressive episode and the final acute-phase HRSD score ≤ 9) were randomized to 8 months of continuation-phase CT or assessment-only.

In both samples, the continuation-phase CT protocol included 10 sessions (two sessions/month for 2 months, then one session/month for 6 months; Jarrett, 1989). Sessions were about 60 minutes each.

In the primary sample, lower risk responders were assessed at 4-month intervals. In the replication sample, assessment-only included evaluation on the same schedule as continuation CT.

In the primary sample only, the fluoxetine and matched pill-placebo plus clinical-management protocol (Fawcett et al., 1987) included 10 sessions provided by experienced pharmacotherapists on the same schedule as continuation CT. The pharmacotherapy protocol was double-blinded. Pharmacotherapists were prohibited from using specific CT methods.

Follow-up phase.—No protocol treatment was provided during follow-up. Independent evaluators, blind to continuation-phase assignment, assessed patients every 4 months for 24 (primary sample) or 16 (replication sample) months. Research personnel helped patients who relapsed or recurred find treatment outside the study protocol.

Measures

Depressive symptoms.—Clinicians completed the HRSD. Patients completed the BDI and IDS-SR. These scales have demonstrated high reliability and validity during CT (Vittengl et al., 2005; Vittengl et al., 2013). Depressive symptoms were measured before acute-phase CT, weekly during acute-phase CT, at a post-acute-phase CT assessment, and then every 4 months for 32 (primary dataset) or 24 (replication dataset) total months after acute-phase CT.

Items from the BDI, HRSD, and IDS-SR were used to score scales reflecting depressed mood, low general interest, and low sexual interest. The depressed mood scale included BDI items 1 (sadness) and 10 (crying), HRSD item 1 (depressed mood), and IDS-SR item 5 (feeling sad). The general interest scale included BDI items 4 (loss of enjoyment/satisfaction) and 12 (loss of interest), and IDS-SR items 19 (general disinterest) and 21 (anhedonia). The sexual interest scale included BDI item 21 (sexual disinterest), HRSD item 14 (loss of libido), and IDS-SR item 22 (sexual disinterest). Items were selected based on their face-valid content. Item ratings were divided by each item's maximum possible score (i.e., BDI and IDS-SR items divided by 3, and HRSD items divided by 2 or 4). These standardized rating were then averaged to form the symptom scales. Higher scores indicated more severe symptomatology.

Supporting the scales' reliability, alpha internal consistency for the depressed mood and low interest scales was moderately high in both datasets (median = .90, range .84-.93) at the end of acute-phase CT. We also examined the scales' correlations with well-established positive and negative temperament measures (Clark et al., 2014), given to a subset (n = 324) of patients during the first week of CT in the primary dataset only. Supporting the scales' validity, baseline depressed mood correlated significantly (p < .05, two-tailed) with negative (.18) but not with positive temperament (−.06); whereas low general and sexual interest correlated significantly with positive (−.19, −.15) but not negative (.09, .05) temperament, respectively.

Statistical Analyses

Repeated-measures multilevel models tested changes in symptom means. Multilevel models allow analysis of all patients, including those with incomplete data (e.g., due to attrition), to increase generalizability of results (e.g., Schafer & Graham, 2002). The two trials' data were analyzed separately because of differences in the trials' designs and, further, to evaluate replicability of the findings. Models included random intercepts to account for repeated symptom measures within participants. In these models, we estimated and contrasted means to clarify significant main effects and interactions.

To test the hypothesis regarding symptom change during acute-phase CT, we predicted symptom scores from the fixed effects of time (14 assessments: baseline/pre-CT, 12 weeks during CT, post-CT), scale (depressed mood, general interest, sexual interest), and the time-by-scale interaction. Similarly, to explore symptom levels after acute-phase CT, we predicted responders' symptom scores from the fixed effects of time (post-acute assessments every 4 months through 32 [primary dataset] or 24 [replication dataset] months), scale, continuation group, and their interactions. The primary dataset included four continuation groups (lower-risk responders were only assessed; higher-risk responders received CT, fluoxetine, or pill placebo), and the replication dataset included two continuation groups (assessment-only or CT).

Results

Descriptive statistics for the symptom scales during the acute phase appear in Table 2. In both datasets, mean symptom levels were moderately high before (51-59%), and notably lower after (14-30%), CT. (Percentages refer to proportions of the maximum possible scores.) Mostly moderate concurrent correlations among scales (median = .43) suggested that depressed mood, low general interest, and low sexual interest were related but not synonymous.

In acute-phase symptom models, the main effects of scale, time, and the scale*time interaction were significant in both datasets (see Table 3 and Figure 1). The scale effect indicated that low sexual interest exceeded depressed mood and low general interest. The time effect indicated that mean symptom intensity decreased. The interaction indicated that decreases differed among symptom scales. In the primary dataset, improvements in depressed mood (38.3%), general interest (34.3%), and sexual interest (20.3%) differed significantly from one another, ps < .05, two-tailed. In the replication dataset, improvements

in depressed mood (42.1%) and general interest (37.3%) did not differ significantly, but both exceeded improvement in sexual interest (25.6%).

In post-acute symptom models, the main effects of scale and scale*group interactions were relevant to the exploratory research question about symptom profiles (see Table 4 and Figure 2). In both datasets, the scale effect indicated that low sexual interest exceeded both depressed mood and low general interest, *p*s < .05, two-tailed, but the latter two symptom means did not differ significantly. Estimated means for depressed mood, low general interest, and low sexual interest, respectively, were 12.8%, 11.7%, and 22.9% in the primary dataset and 8.4%, 8.5%, and 15.2% in the replication dataset.

In the primary dataset only, the scale*group interaction was statistically significant (Table 4). Consistent with visual inspection of Figure 3, follow-up tests showed that sexual interest, but not depressed mood or general interest, varied significantly across continuation-phase groups. Low sexual interest was more severe among higher risk responders receiving continuation-phase CT (25.7%), fluoxetine (22.8%), or pill placebo (29.4%) than lower-risk responders who were only assessed (13.8%), *p*s < .05, two-tailed. In addition, the contrast between fluoxetine and pill placebo was significant for low sexual interest. However, the non-significant group*scale*time interaction suggested that this pattern of symptom differences did not clearly change as continuation-phase treatment progressed or ended. No interactions of scale with continuation-phase group or time were significant in the replication dataset.

To clarify the clinical significance of residual depressed mood, low general interest, and low sexual interest among acute-phase CT responders, we predicted time to MDD relapse or recurrence in Cox regression models (see Table 5). Because the symptom scales were substantively inter-correlated (see Table 2), rather than focusing on the scales' regression coefficients individually, we computed two planned contrasts: The main effect of average symptom intensity considering all three scales, and the interaction reflecting differences among the scales, in predicting relapse/recurrence. Greater average residual symptoms predicted relapse/recurrence substantively (hazard ratios) in the primary (2.08) and replication (4.12) datasets, and the three symptoms did not differ significantly in predicting relapse/recurrence.

Discussion

The current analyses clarified changes in depressed mood (predominantly negative affect) and low interest/pleasure (low positive affect) during and after acute-phase CT for MDD. Replicating and extending past research (Dunn et al., 2020), we found that depressed mood, general interest, and sexual interest improved substantively. However, depressed mood and general interest improved significantly more than did sexual interest. Moreover, patients continued to report greater difficulty with low sexual interest than with depressed mood or low general interest for at least 2 years after response to acute-phase CT. Differential effects of continuation-phase CT or fluoxetine on these symptom profiles were not evident. This pattern of findings was replicated in two randomized controlled trial datasets.

Commensurate with patients' goals (Demyttenaere et al., 2015), our findings reinforce efforts to enhance CT's effects on positive affective symptoms. Traditional CT targets both high negative affect (e.g., cognitive restructuring) and low positive affect (e.g., behavioral activation; Beck et al., 1979). However, basic research shows that negative affect is more changeable than is positive affect (e.g., Peeters et al., 2006), which may be reflected in reduced improvement in positive affective symptoms of MDD during treatment. Consequently, augmenting CT with well-being and positive affect interventions may improve patient outcomes (Dunn et al., 2019; Geschwind et al., 2019). For example, psychotherapy focused on increasing positive affect (e.g., with behavioral activation and other interventions to boost reward sensitivity) versus reducing negative affect (similar to traditional CT minus behavioral activation) has produced larger gains in positive affect *and* larger deceases in negative affect (Craske et al., 2019). Such outcomes are important because residual symptoms, including depressed mood, low general interest, and low sexual interest, were broadly predictive of MDD relapse/recurrence among acute-phase CT responders in the current samples.

Neither continuation-phase CT nor antidepressant medication changed symptom profiles in the analyzed datasets. It possible that most of the potential improvements in general and sexual interest occurred in the acute phase, leaving less room for additional gains among continuation phase among CT responders. Perhaps more likely, continuation-phase fluoxetine and CT may not have "targeted" sexual interest sufficiently and/or this symptom may take longer to normalize, even though sexual interest is clearly tied to general positive affect (Mehta et al., 2014).

For partnered patients, adding elements of couple therapy for depression (Whisman & Beach, 2012) might improve targeting of sexual interest during CT. For example, including partners in some CT sessions, identifying and reducing stress generation in relationships, and increasing caring behaviors (e.g., demonstration of affection, respect, and concern) may improve the quality of relationships in general and sexual interest in particular (cf. Debrot et al., 2017). For single patients who want romantic relationships, improvements in sexual interest might require emphasis on behavioral activation, perhaps augmented with social-skills training (e.g., Becker et al., 1987), aimed toward successful interactions with potential partners.

The current analyses had both strengths and limitations. Strengths included relatively large samples of carefully diagnosed patients receiving treatment from well-trained and supervised clinicians. Further, patients were assessed repeatedly before, during, and after treatment using well-established depressive symptom measures. Finally, the major findings replicated across independent datasets, allaying concerns about scientific reproducibility (Open Science Collaboration, 2015).

Limitations included uncertain generalizability of the results to other patient populations (e.g., depressive disorders other than recurrent MDD) and treatment environments (e.g., routine clinical practice). Further, the depressed mood and low interest scales were constructed from standard depressive symptoms measures and overlapped empirically. Future research using measures designed to differentiate facets of depression and related

disorders (e.g., Watson et al., 2012) might provide greater insight into how and when these symptoms change.

Future research might also explore relations between improvements in positive affective symptoms, including low general and sexual interest, and psychosocial functioning with treatment of MDD. Past research indicates that psychosocial functioning improves more slowly, and less overall, than overall depressive symptoms during acute-phase treatment (Vittengl & Jarrett, 2014). Further, low interest and depressed mood have shown unique, substantive relations with psychosocial functioning (Fried & Nesse, 2014). Consequently, clarifying potentially causal connections between increases in positive affective symptoms and psychosocial functioning during treatment would be valuable from theoretical and clinical standpoints.

Enhancing adults' positive affect is more difficult than dampening negative affect when treating MDD with antidepressant medication or CT (Craske et al., 2016; Dunn et al., 2020; Soskin et al., 2012). In the current analyses, the persistence of low sexual interest relative to depressed mood and general interest for years after response to acute-phase CT, even with continuation CT or antidepressant medication, highlights the need for better targeting of this positive affective symptom. Modifying and augmenting CT hold potential to target positive affective symptoms more effectively, decrease relapse/recurrence of MDD, and improve patients' quality of life.

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Conflict of Interest Statement.

Dr. Vittengl is a paid reviewer for UpToDate. Dr. Clark has no financial interest or conflict of interest in the research. During the past three years, Dr. Thase has consulted with and/or served on advisory boards for AbVie (including Allergan and Forest Laboratories), Acadia, Alkermes, AstraZeneca, Axsome, Clexio, Jazz Pharmaceuticals, Johnson & Johnson (includes Janssen), Lundbeck, Merck, Otsuka, Perception, Pfizer Pharmaceuticals, Sunovion, and Takeda; he has received grant support from Acadia, Axsome, Myriad (includes Assurerx), Johnson & Johnson (Janssen), Takeda, the Agency for Healthcare Research and Quality, Patient Centered Outcomes Research Institute and the NIMH. He has received royalties from American Psychiatric Publishing, Inc. (APPI), Guilford Publications, Herald House, UpToDate, and W.W. Norton & Company, Inc. Dr. Thase's spouse is an employee of Peloton Advantage, which does business with several pharmaceutical companies. Dr. Jarrett is a paid consultant to the NIH, NIMH, and UpToDate. She has equity holdings in Amgen, Johnson and Johnson, and Procter and Gamble. Her medical center charges fees for the cognitive therapy she provides to patients.

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Highlights

- Major depressive disorder (MDD) involves depressed mood and low interest/pleasure.
- We measured these symptoms during and after cognitive therapy (CT) for MDD.
- Depressed mood and general interest improved more than sexual interest during CT.
- These symptom differences persisted for at least two years after CT response.
- Continuation CT or antidepressant medication did not change the symptom differences.

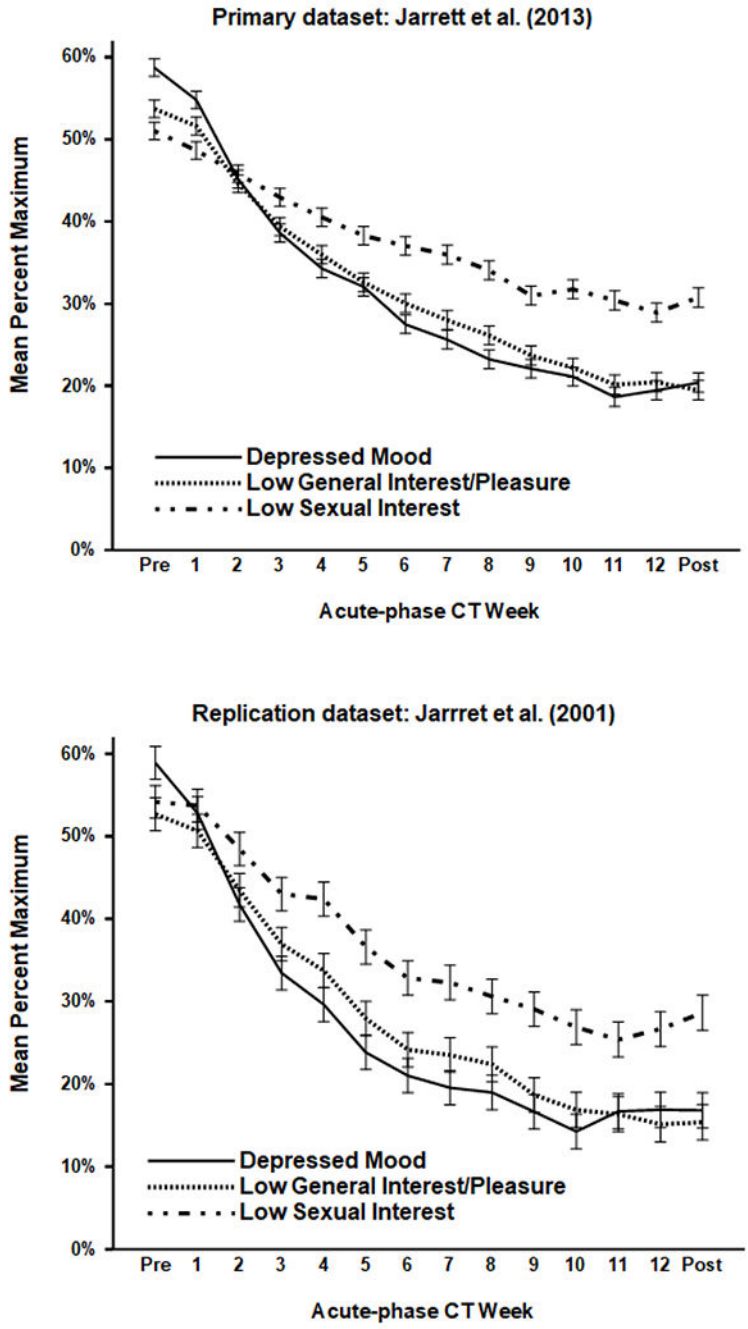

Figure 1.

Mean symptom levels (± 1 *SE*) during acute-phase cognitive therapy (CT) for recurrent major depressive disorder. The top ($N = 523$) and bottom ($N = 156$) panels depict data from the Jarrett et al. (2013) and Jarrett et al. (2001) clinical trials, respectively.

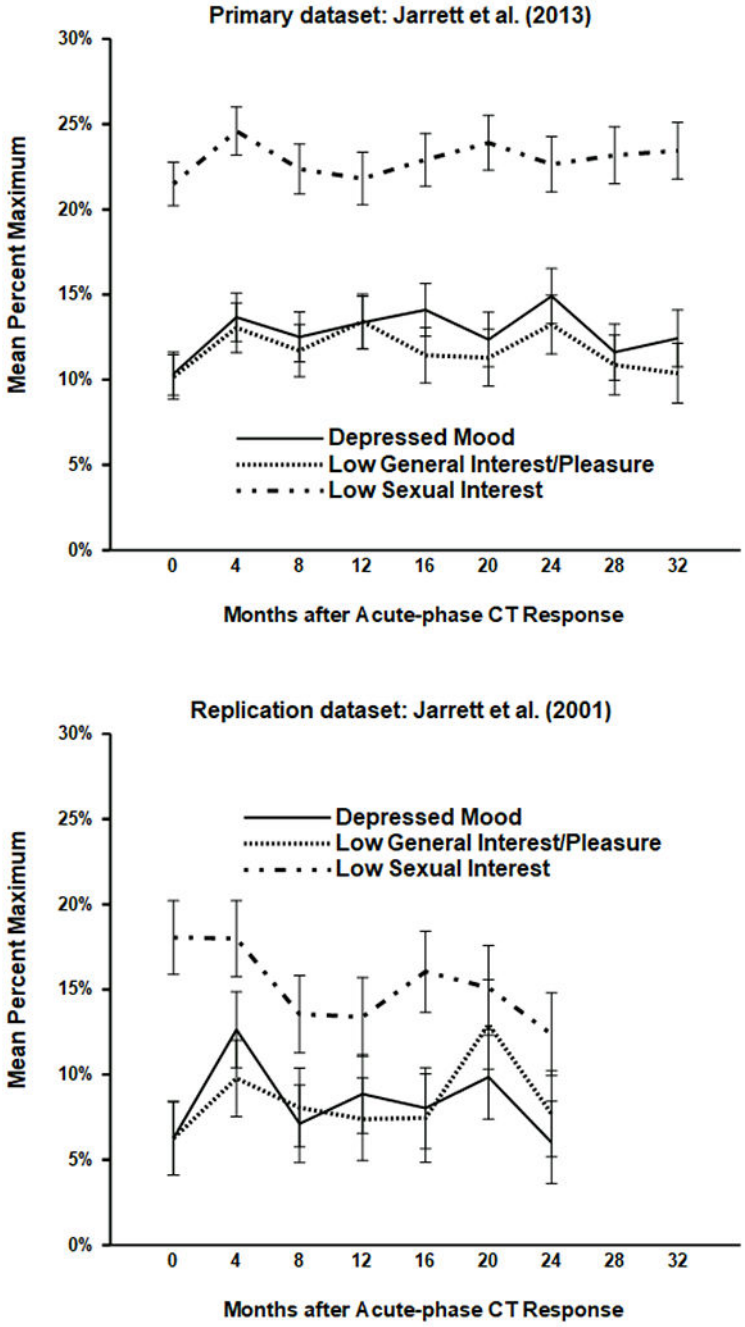

Figure 2.

Mean symptom levels (± 1 *SE*) after response to acute-phase cognitive therapy (CT) for recurrent major depressive disorder. The top ($N = 290$) and bottom ($N = 84$) panels depict data from the Jarrett et al. (2013) and Jarrett et al. (2001) clinical trials, respectively.

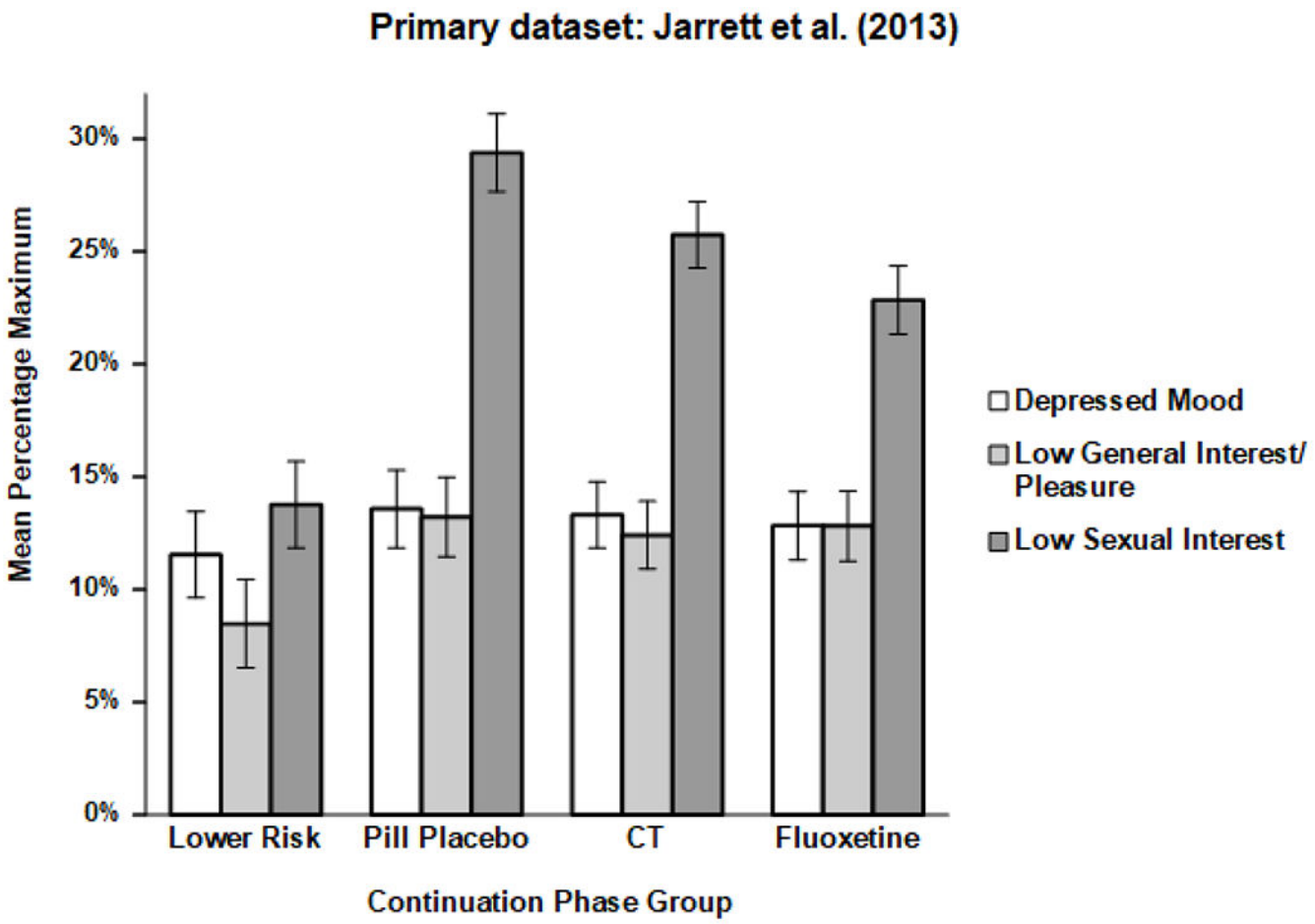

Figure 3.

Mean symptoms levels (± 1 *SE*) for 32 months after response to acute-phase cognitive therapy for recurrent major depressive disorder in the Jarrett et al. (2013; $N = 290$) dataset, separated by continuation treatment group. CT = cognitive therapy.

Table 1

Description of the Acute-phase Samples

	Primary dataset (*N* = 523) % or *M* (SD)	**Replication dataset (*N* = 156) % or *M* (SD)**
Female	67.5%	74.4%
Age in years	42.4 (12.1)	41.2 (11.1)
Ethnicity		
Asian	5.2%	0.0%
Black	10.3%	7.7%
Hispanic	0.0%	4.5%
White	80.9%	86.5%
Other	3.6%	1.3%

Table 2

Descriptive Statistics and Correlations among Symptom Scales in Two Datasets

				Correlations				
Symptom scale	***N***	***M***	***SD***	**1**	**2**	**3**	**4**	**5**
Primary dataset								
1. Depressed mood: Pre-CT	523	58.7%	18.0%					
2. Low general interest/pleasure: Pre-CT	499	53.8%	20.3%	.45*				
3. Low sexual interest: Pre-CT	523	51.0%	30.3%	.19*	.37*			
4. Depressed mood: Post-CT	395	19.5%	21.3%	.26*	.15*	.13*		
5. Low general interest/pleasure: Post-CT	368	18.5%	20.7%	.20*	.32*	.20*	.71*	
6. Low sexual interest: Post-CT	395	29.9%	30.4%	.11*	.19*	.52*	.40*	.53*
Replication dataset								
1. Depressed mood: Pre-CT	156	58.9%	16.5%					
2. Low general interest/pleasure: Pre-CT	155	52.5%	18.8%	.40*				
3. Low sexual interest: Pre-CT	156	54.2%	31.4%	.26*	.30*			
4. Depressed mood: Post-CT	128	16.0%	19.8%	.17	−.06	.02		
5. Low general interest/pleasure: Post-CT	126	14.4%	17.5%	.04	.10	.01	.74*	
6. Low sexual interest: Post-CT	128	27.8%	33.0%	.14	.05	.35*	.45*	.48*

Note. M and *SD* are given as percent of the maximum possible score. CT = acute-phase cognitive therapy.

* $p < .05$, two-tailed.

Table 3

Prediction of Symptom Levels during Acute-phase Cognitive Therapy

Fixed effects	df	*F*	*p*
Primary dataset (*N* = 523; Jarrett et al., 2013)			
Scale	2, 18000	199.31	< .001
Time	13, 18000	406.35	< .001
Scale * time	26, 18000	14.48	< .001
Replication dataset (*N* = 156; Jarrett et al., 2001)			
Scale	2, 5629	124.18	< .001
Time	13, 5629	160.09	< .001
Scale * time	26, 5629	2.92	< .001

Note. The scale effect involves depressed mood, low general interest/pleasure, and low sexual interest symptoms. The time effect is 14 assessments conducted approximately weekly. Random intercepts accounting for nesting of data within participants were included in each model but are not shown.

Table 4

Prediction of Symptom Levels after Response to Acute-phase Cognitive Therapy

Fixed effects	df	*F*	*p*
Primary dataset (*N* = 290; Jarrett et al., 2013)			
Group	3, 4587	3.78	.010
Scale	2, 4587	180.29	<.001
Time	8, 4587	1.66	.103
Group * scale	6, 4587	9.77	<.001
Group * time	24, 4587	2.06	.002
Scale * time	16, 4587	0.43	.975
Group * scale * time	48, 4587	0.89	.689
Replication dataset (*N* = 84; Jarrett et al., 2001)			
Group	1, 1323	0.86	.353
Scale	2, 1323	26.99	<.001
Time	6, 1323	2.21	.040
Group * scale	2, 1323	0.46	.633
Group * time	6, 1323	2.72	.013
Scale * time	12, 1323	0.86	.587
Group * scale * time	12, 1323	0.71	.745

Note. The group effect refers to the eight-month continuation phase treatment assignment—in the primary dataset, lower-risk patients were only assessed, whereas higher-risk patients were randomized to continuation CT, fluoxetine, or pill placebo with clinical management; in the replication dataset, patients were randomized to continuation CT or assessment-only. The scale effect involves depressed mood, low general interest/pleasure, and low sexual interest symptoms. The time effect is 9 (primary dataset) or 7 (replicated dataset) assessments conducted approximately every 4 months after acute-phase CT. Random intercepts accounting for nesting of data withing participants were included in each model but are not shown.

Table 5

Prediction of Relapse/Recurrence from Residual Symptoms at the End of Acute-phase CT

Primary dataset (*N* = 274; Jarrett et al., 2013)			
Symptom predictors	***B***	***SE***	***p***
Depressed mood	1.92	0.96	.046
Low general interest	−0.54	0.93	.565
Low sexual interest	0.81	0.47	.080
Planned contrasts			
Main effect: Average symptom intensity	0.73	0.31	.019
Interaction: Differences among symptoms	$\chi^2(2) = 2.25$		.324
Replication dataset (*N* = 84; Jarrett et al., 2001)			
Symptom predictors	***B***	***SE***	***p***
Depressed mood	2.87	1.64	.079
Low general interest	0.89	1.73	.608
Low sexual interest	0.48	0.60	.420
Planned contrasts			
Main effect: Average symptom intensity	1.41	0.58	.016
Interaction: Differences among symptoms	$\chi^2(2) = 1.93$		.381

Note. Analyzed samples were responders to acute-phase cognitive therapy (CT). Tabled results are from Cox regression models conducted separately in the two datasets. The models predicted major depressive relapse or recurrence over 32 (primary dataset) or 24 (replication dataset) months after acute-phase CT. The symptom scale predictors were entered in the models simultaneously. Planned contrasts utilized the predictors' tabled coefficients. Models controlled continuation phase group: In the primary dataset, lower-risk patients were only assessed, whereas higher-risk patients were randomized to continuation CT, fluoxetine, or pill placebo with clinical management; in the replication dataset, patients were randomized to continuation CT or assessment-only