Journal of Psychopathology and Behavioral Assessment (2024) 46:147–157
https://doi.org/10.1007/s10862-023-10099-9

Temporal Relations Among Changes in Activation, Avoidance, and Anxiety in the Unified Protocol

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Accepted: 21 October 2023 / Published online: 14 November 2023

Abstract
Behavioral activation and experiential avoidance are considered closely related transdiagnostic constructs. Decreases in behavioral activation and increases in avoidance are both thought to play a role in the maintenance of emotional disorder symptoms. Using a series of random intercept cross-lagged panel models, this study examined the temporal relations between change in behavioral activation, experiential avoidance, and anxiety symptoms during outpatient administration of the Unified Protocol. Between-person results demonstrated that greater avoidance was associated with lower activation, and more severe anxiety symptoms were associated with both greater avoidance and lower activation. Within-person results suggested that improvements in avoidance tended to predict increased activation and decreased anxiety symptoms. Changes in activation did not substantially predict changes in avoidance or anxiety. Overall, these results provide preliminary information on the timing of important therapeutic processes and may shed light on how clinicians should prioritize targets.

Keywords Anxiety · Unified Protocol · Avoidance · Activation · Mechanism

Emotional disorders (i.e., anxiety, depression, and related disorders) are among the most prevalent psychiatric conditions in the general population (Bandelow & Michaelis, 2015; Merikangas et al., 2010), and these disorders co-occur at high rates (Lamers et al., 2011). Targeting symptoms of co-occurring disorders sequentially using multiple discrete protocols linked to specific DSM disorders is likely an inefficient approach, particularly as extended treatment durations exacerbate the long waitlists patients endure to gain access to treatment (McDonnell et al., 2022). Transdiagnostic approaches to psychotherapy have recently gained popularity; these approaches target shared mechanisms that are thought to underlie the development and maintenance of the range of emotional disorders (Eustis et al., 2020; Gross, 2015; Southward et al., 2021). Researchers have demonstrated that transdiagnostic treatments (e.g., the Unified Protocol, UP; Barlow et al., 2018) are as effective in reducing symptoms of emotional disorders as diagnosis-specific treatment protocols (Barlow et al., 2017; Bentley et al., 2017). As transdiagnostic interventions are designed to target core components underlying emotional disorders, they can efficiently address comorbid conditions and reduce therapist burden given that clinicians can competently address most common mental disorders with one protocol (Groen et al., 2020; McHugh et al., 2009).

Experiential Avoidance

Emotional disorders are thought to be maintained by efforts to avoid frequently experienced negative emotions (Bullis et al., 2019; Hayes et al., 2006). Experiential avoidance (EA) refers to the desire to suppress or avoid unwanted private experiences such as emotions and thoughts (Hayes et al., 1996). Although avoidance of negative emotions can be an adaptive short-term emotion regulation strategy (Campbell-Sills et al., 2006), there is considerable evidence that prolonged emotional avoidance leads to more frequent and intense distress, maintaining symptoms of emotional disorders (Drost et al., 2014; Fernández-Rodríguez et al., 2023; Roemer & Borkovec, 1994). EA can manifest in a variety of forms (Blalock & Joiner, 2000; Eustis et al., 2020). For example, EA may present as avoidance of situations that cause distress

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(negative reinforcement) in response to anxiety (Akbari et al., 2022). Among people with depressive symptoms, EA often includes decreased engagement with healthy behavior and pleasurable activities (Wagener et al., 2016) which results in a reduction in positive reinforcement from these activities, perpetuating a downward spiral of distress, avoidance, and low mood (Manos et al., 2010). Indeed, a low level of response-contingent positive reinforcement, the process by which the frequency of a behavior is increased following the associated reward, has long been linked with greater emotional distress (Gill et al., 2019).

Behavioral Activation

Behavioral activation, a commonly used therapeutic technique, is designed to combat EA by encouraging engagement in behaviors that restore stable sources of positive reinforcement. This technique relies on using the client's values to identify the personally-relevant behaviors (Santos et al., 2017) that have the greatest potential to elicit reinforcement from the environment (Hopko et al., 2003). Although multiple variants of behavioral activation treatment packages have been developed (Lejuez et al., 2001; Martell et al., 2010), all share the assumption that a positive association exists between activation and improvements in emotional disorder symptoms (Fuhr et al., 2016). Indeed, researchers have demonstrated the therapeutic benefit of behavioral activation among a variety of populations, including general adult psychiatric outpatients, women with postpartum depression, adult outpatients specifically diagnosed with a depressive disorder (Jacobson et al., 2000; O'Mahen et al., 2017; Santos et al., 2019), highlighting the transdiagnostic nature of this process. In addition to its established efficacy, behavioral activation is also straightforward to deliver, which can aid in widespread dissemination (Dimidjian et al., 2011).

The Association Between Activation and Avoidance

Activation appears to be closely related to avoidance, and researchers have argued that these processes may be considered two sides of the same transdiagnostic coin (Fernández-Rodríguez et al., 2018). In clinical samples, researchers have established that people with emotional disorders are often demonstrate both emotionally-avoidant response patterns *and* a reduction in activation (Fernández-Rodríguez et al., 2018; González-Fernández et al., 2018). As activation and avoidance both appear integral to the maintenance of emotional disorder symptoms, the temporal relation between changes in these processes during therapy and their effect on emotional disorder symptoms is of importance to clinicians and researchers. For example, if reductions in behavioral avoidance precede changes in activation, clinicians may prioritize therapeutic strategies to decrease avoidance behaviors, as increases in activation are likely to follow. Similarly, identifying the effect of changes in activation and avoidance on anxiety symptoms may encourage clinicians to focus on these processes as potential mechanisms of change.

The Present Study

As behavioral avoidance and activation appear to play an important role in the maintenance of emotional disorder symptoms, the goal of the present study was to examine the temporal relations among changes in behavioral activation, behavioral avoidance, and anxiety symptoms in an adult sample receiving transdiagnostic cognitive-behavioral treatment for emotional disorders. Specifically, we conducted a series of random intercept cross-lagged panel models (RI-CLPM; Hamaker et al., 2015) examining the relations between behavioral activation, avoidance, and anxiety symptoms across treatment with the Unified Protocol (UP; Barlow et al., 2018), a transdiagnostic intervention for emotional disorders designed to target aversive, avoidant responses to emotions (Sauer-Zavala et al., 2022; Eustis et al., 2020). As research regarding the temporal changes between activation, avoidance, and anxiety is limited, we did not make a priori hypotheses about our results.

Method and Materials

Participants

We recruited 70 participants who met criteria for at least one of the following Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) emotional disorders: generalized anxiety disorder ($n = 33$; 47.1%), major depressive disorder ($n = 19$; 27.1%), social anxiety disorder ($n = 16$; 22.9%), persistent depressive disorder ($n = 12$; 17.1%), obsessive–compulsive disorder ($n = 5$; 7.1%), panic disorder ($n = 4$; 5.7%), post-traumatic stress disorder ($n = 3$; 4.3%), acute stress disorder ($n = 1$; 1.4%), or agoraphobia ($n = 1$; 1.4%). A majority of participants identified as female ($n = 47$; 67.1%), white ($n = 52$; 74.3%) and heterosexual ($n = 52$; 74.3%), with an average age of 33.74 ($SD = 12.64$) and a median household income between $50,000 and $99,999. Participants were excluded from the study if they reported symptoms consistent with diagnoses of mania in the past year, acute suicidality, substance use disorder, or psychotic features; had received five or more sessions of cognitive behavioral therapy (CBT) in the past five years; were unwilling to

stop synchronous treatment for an emotional disorder; or were unable to maintain a stable dosage of medication during study participation. All participants provided informed consent, and study procedures were approved by the local institutional review board.

Study Treatment

The treatment consisted of the five core modules of the UP: understanding emotions, mindful emotion awareness, cognitive flexibility, countering emotional behaviors, and confronting physical sensations (Wilamowska et al., 2010). These modules were delivered in 50–60 min weekly, individual sessions in a personalized order (see Study Design below). Four therapists, including a licensed clinical psychologist, a post-doctoral fellow, and two advanced graduate students, provided the treatment and demonstrated good adherence (Sauer-Zavala et al., 2022). Prior research in the current sample (Sauer-Zavala et al., 2022) and other samples (Cassiello-Robbins et al., 2020; Sakiris & Berle, 2019) has shown that the UP is efficacious in reducing anxiety and depression.

Measures

Behavioral Avoidance

The Multidimensional Experiential Avoidance Questionnaire – Behavioral Avoidance subscale (MEAQ-BA; Gámez et al., 2011) is an 11-item subscale from the broader MEAQ designed to assess situational avoidance of physical discomfort and distress (e.g., "I go out of my way to avoid uncomfortable situations"). Each item is rated from 1 (*strongly disagree)* to 6 (*strongly agree)* and summed to create a total score. MEAQ-BA items demonstrated excellent internal consistency (McDonald's ωs: 0.94-0.96) across the first six sessions.

Behavioral Activation

The Cognitive-Behavioral Therapy Skills Questionnaire – Behavioral Activation subscale (CBTSQ-BA, Jacob et al., 2011) is a 7-item questionnaire designed to assess patients' consistency with daily routines, engagement in adaptive actions (e.g., engaging in an activity instead of a harmful behavior), and social engagement. Each item is rated from 1 (*I don't do this)* to 5 (*I always do this),* and summed to create a total score. CBTSQ-BA items demonstrated excellent internal consistency across the first six sessions (ωs: 0.92-0.94).

Anxiety Symptoms

The Overall Anxiety Severity and Impairment Scale (OASIS; Norman et al., 2006) is a 5-item self-report measure designed to assess the severity of and impairment due to anxiety in the prior week. OASIS items are rated from 0 to 4 with unique anchors for each item and summed to create a total score, with a clinical cutoff of 8. OASIS items demonstrated acceptable-to-good internal consistency across the first six sessions (ωs: 0.79-0.88).

Diagnostic Interview

The Diagnostic Interview for Anxiety, Mood, and Obsessive–Compulsive and Related Neuropsychiatric Disorders (DIAMOND, Tolin et al., 2018) is a semi-structured diagnostic interview for DSM-5 disorders. Graduate students certified in DIAMOND administration completed baseline diagnostic assessments and demonstrated excellent reliability on clinically significant diagnoses Krippendorff's αs: 0.91–1.00; median = 1.00; Sauer-Zavala et al., 2022).

Study Design

The present study is a secondary data analysis of Sauer-Zavala et al. (2022), a sequential multiple assignment randomized trial (SMART) design with two randomization stages. First, participants were randomized to receive UP modules in one of three sequences: prioritizing modules that compensated for relative deficits ($n = 21$; 30.0%), prioritizing modules that capitalized on relative strengths ($n = 24$, 34.3%), or the published standard order of UP modules (n = 25, 35.7%; Barlow et al., 2018). Patient skill strengths and weaknesses were determined by standardizing scores of validated measures of each skill and rank ordering the associated UP modules (for a full description, see Sauer-Zavala et al., 2022). Second, participants were re-randomized just before mid-treatment (i.e., between sessions 5 and 6) to either complete the full 12 sessions ($n = 35$, 50.0%) or discontinue treatment after session 6 ($n = 35$, 50.0%).

Data Analytic Plan

We first examined descriptive statistics of our primary variables of interest. To evaluate the severity of our sample, we used independent samples *t*-tests to compare baseline scores on behavioral avoidance, behavioral activation, and anxiety in the current sample to norms from the validation samples for each measure. We then examined bivariate between-person correlations between our primary variables of interest and participants' demographic characteristics in addition to bivariate between- and within-person

Table 1 Means and standard deviations for variables of interest at all timepoints

Measure	Baseline	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
OASIS	9.13 (3.67)	8.53 (3.53)	8.02 (3.34)	7.93 (3.65)	7.77 (3.40)	7.03 (3.07)	7.08 (3.57)
CBTSQ-BA	20.17 (4.38)	20.10 (4.25)	20.18 (4.53)	20.48 (4.01)	20.72 (4.89)	21.29 (4.94)	20.98 (4.92)
MEAQ-BA	40.29 (11.48)	40.59 (11.05)	39.60 (11.52)	39.10 (11.37)	36.77 (12.26)	35.93 (11.36)	35.32 (10.26)

Data are presented as Mean (*SD*)

OASIS Overall Anxiety Severity and Impairment Scale, *CBTSQ-BA* Cognitive-Behavioral Skills Questionnaire—Behavioral Activation, *MEAQ-BA* Multidimensional Experiential Avoidance Questionnaire—Behavioral Avoidance

correlations among our primary variables of interest. To examine changes in behavioral avoidance, behavioral activation, and anxiety symptoms across treatment, we conducted three hierarchical linear models (HLMs), regressing each variable in a separate model on session number and including random intercepts and slopes using the *nlme* package (Version 3.1; Pinheiro et al., 2023) in *R* (Version 4.3.0; R Core Team, 2022).

To test the temporal relations among behavioral avoidance, behavioral activation, and anxiety, we examined three RI-CLPMs to disaggregate within-person associations from stable, between-person differences. RI-CLPMs allow for the identification of dynamic bidirectional relations between variables as they change over time, and Falkenström et al. (2022) demonstrated that RI-CLPMs lead to less biased parameter estimates than similar modeling approaches when applied to psychotherapy data. In model 1, we examined the session-to-session cross-lagged relations between behavioral activation and avoidance across the first six sessions. In model 2, we examined the session-to-session cross-lagged relations between behavioral avoidance and anxiety symptom severity across the first six sessions. In model 3, we examined the session-to-session cross-lagged relations between behavioral activation and anxiety symptom severity across the first six sessions. We created latent variables representing each construct of interest at each session by setting the loading of the total score of each construct at each session to 1.

We also conducted sensitivity analyses to explore if the results using the first six sessions of therapy generalized across the treatment window. First, because half of participants were randomized to discontinue treatment after session six, we conducted three HLMs to test whether duration condition moderated change in each of our variables of interest across all 12 weeks. We regressed each construct on session number, a dummy-coded duration condition variable, and the product of session number and this duration condition variable while modeling random intercepts and slopes. We then re-ran our three primary RI-CLPMs above. When the product term from the respective HLM was significant, we included all available therapy sessions in these RI-CLPMs. When the product term from the relevant HLM was not significant, we used all available data in these RI-CLPMs.

We evaluated model fit in all RI-CLPMs using chi-squared goodness of fit, root mean square of approximation (RMSEA), comparative fit index (CFI), and the standardized root mean square residual (SRMR). Models with nonsignificant chi-squared statistics, RMSEA < 0.05, CFI > 0.95, and SRMR < 0.05 were considered to have good fit, whereas models with significant chi-squared statistics, RMSEA < 0.08, CFI > 0.90, and SRMR < 0.08 were considered to have acceptable fit (Masselink et al., 2018). We considered models to have generally acceptable fit if most of the fit statistics fell within the acceptable range.

Results

Descriptive Statistics and Changes in Avoidance, Activation, and Anxiety

At baseline, participants' average MEAQ-BA scores (Table 1) were not significantly different than those reported by Gámez et al. (2011), $t(465) = 1.99$, $p = 0.52$, 95% CI [-0.55, -4.91], $d = 0.20$. Participants' average CBTSQ-BA scores at baseline were significantly higher than those reported by Jacob et al. (2011), $t(199) = 1.97$, $p = 0.01$, 95% CI [-3.96, -1.37], $d = 0.53$. Participants' average baseline OASIS scores were also above the clinical threshold recommended by Norman et al. (2006). There were no significant correlations between demographic variables and clinical variables of interest; thus, we did not include any demographic variables as covariates in any subsequent analyses. The strongest between- and within-person correlations between clinical variables at baseline was behavioral avoidance and anxiety symptom severity ($r_{between} = 0.40$, $r_{within} = 0.37$) (Table 2).

Across the first six sessions, participants reported small-to-medium sized, significant reductions in behavioral avoidance, $B = -0.92$, $SE = 0.23$, $p < 0.01$, 95% CI [-1.37, -0.47], $d = 0.49$, and anxiety, $B = -0.28$, $SE = 0.10$, $p < 0.01$,

Table 2 Correlations Among Measures of Interest at Baseline

Variable	1	2	3	4	5	6	7
1. Gender							
2. Education	.17						
3. Marital Status	-.05	.31**					
4. Age	.09	.39**	.33**				
5. OASIS	-.16	.27	.00	.12		-.26**	.37**
6. CBTSQ-BA	-.03	.09	.07	-.10	-.35**		-.28**
7. MEAQ-BA	.00	-.23	-.06	-.03	.40**	-.35**	

Between-person correlations are below the diagonal and within-person correlations for relevant variables are above the diagonal. Gender: 0 = female, 1 = male

OASIS Overall Anxiety Severity and Impairment Scale, *CBTSQ-BA* Cognitive-Behavioral Therapy Skills Questionnaire—Behavioral Activation, *MEAQ-BA* Multidimensional Experiential Avoidance Questionnaire—Behavioral Avoidance

*$p < .05$; **$p < .01$

95% CI [-0.48, -0.08], $d = 0.41$. Participants also reported small-sized, significant increases in behavioral activation, $B = 0.21$, $SE = 0.09$, $p = 0.02$, 95% CI [0.03, 0.39], $d = 0.19$.[1]

Reciprocal Effects of Avoidance and Activation

The first RI-CLPM modeling changes in behavioral avoidance and behavioral activation demonstrated acceptable fit, $\chi^2(37) = 50.45$, $p = .06$, CFI = .983, RMSEA = .073, SRMR = .062. Between-persons, there was not a significant association between random intercepts of avoidance and activation across the first 6 sessions, $r = -.32$, $p = .23$ (Fig. 1).

Within-person reductions in avoidance across the first two sessions significantly predicted subsequent increases in behavioral activation, βs: –.76 – –.50, $ps < .05$, and within-person increases in behavioral activation at session 2 significantly predicted subsequent decreases in behavioral avoidance, $\beta = -.24$, $p < .05$. Although the remaining paths were not significant, there was a clear trend in which the average effect of within-person changes in avoidance on activation, $\overline{\beta} = -.47$, was over three times as large as the average effect of within-person changes in activation on avoidance, $\overline{\beta} = -.15$. Further, both sets of effects were at least twice as large across the first four sessions, $\overline{\beta}_{avoidance} = -.52$, $\overline{\beta}_{activation} = -.18$, than at session 5, $\beta_{avoidance} = -.26$, $p = .13$, $\beta_{activation} = -.03$, $p = .80$.

[1] Similarly, across all 12 weeks, participants reported large, significant reductions in behavioral avoidance, $B = -.71$, $SE = .12$, $p < .01$, 95% CI [-.96, -.47], $d = .79$; medium-sized, significant reductions in anxiety, $B = -.16$, $SE = .04$, $p < .01$, 95% CI [-.24, -.08], $d = .54$; and small-sized, significant increases in behavioral activation, $B = .09$, $SE = .05$, $p = .03$, 95% CI [.01, .19], $d = .26$. These 12-week changes in behavioral avoidance, $B = .32$, $SE = .30$, $p = .29$, 95% CI [-.29, .93]; anxiety, $B = .08$, $SE = .08$, $p = .37$, 95% CI [-.08, .24]; and behavioral activation, $B = -.20$, $SE = .12$, $p = .11$, 95% CI [-.44, .04], did not significantly differ by duration condition.

Sensitivity Analyses

When using data from all 12 weeks, there was a significant, negative association between random intercepts ($r = -.40$, $p < .01$), that was similar in size to the corresponding correlation in the six-session model (Fig. S1). Also similar to the six-session model, reductions in avoidance significantly predicted subsequent increases in behavioral activation across the first two sessions when using data from all 12 weeks, although reductions in avoidance also predicted subsequent increases in behavioral activation at session 5 and week 11 (βs: –.33 – –.15, $ps < .05$).

Reciprocal Effects of Avoidance and Anxiety

The second RI-CLPM demonstrated generally acceptable fit to the data, $\chi^2(37) = 60.32$, $p < .01$, CFI = .963, RMSEA = .096, SRMR = .081. Between-persons, there was not a significant association between random intercepts of avoidance and anxiety across the first 6 sessions, $r = .54$, $p = .31$ (Fig. 2).

Within-persons, there were no significant reciprocal effects of avoidance on anxiety. Numerically, the strongest, medium-sized effects occurred within the first two sessions, with greater within-person reductions in avoidance predicting subsequent reductions in anxiety, βs: .25–.43, $ps > .06$. By contrast, there were only small or very small effects of within-person changes in anxiety on subsequent changes in avoidance in the first two sessions, βs: –.02–.13, $ps > .14$. Across the remaining sessions, both sets of reciprocal effects were small or very small, βs: –.16–.01, $ps > .22$.

Sensitivity Analyses

When using data from all 12 weeks, there was a significant, positive association between random intercepts ($r = .52$, $p = .03$), that was similar in size to the corresponding

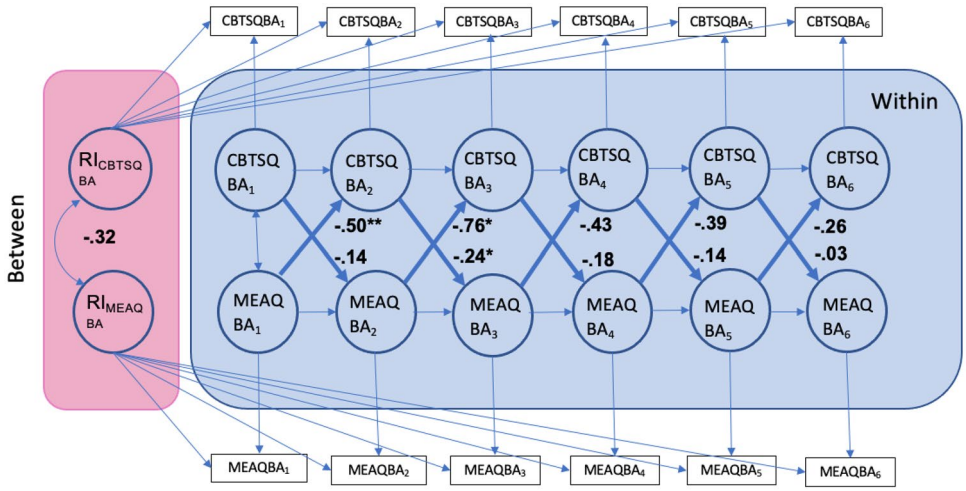

Fig. 1 Random Intercept Cross-Lagged Panel Model (RI-CLPM) of avoidance predicting session-to-session changes in behavioral activation. Red shaded area indicates between-subject portion, blue shaded area indicates within-subject portion. $RI_{CBTSQBA}$ = random intercept of behavioral activation. RI_{MEAQBA} = random intercept of avoidance. MEAQ-BA = Multidimensional Experiential Avoidance Questionnaire Behavioral Avoidance subscale, CBTSQ-BA = Cognitive-Behavioral Therapy Skills Questionnaire Behavioral Activation subscale. Bold values on the diagonal arrows indicate Beta weights of latent avoidance predicting behavioral activation at the same session, controlling for previous session behavioral activation scores. *$p < .05$; **$p < .01$

correlation in the six-session model (Fig. S2). Also similar to the six-session model, both sets of reciprocal effects of avoidance and anxiety were mostly numerically small across all 12 weeks (βs: .09–.41, *p*s = .02–.12). The largest numerical effects were reductions in avoidance predicting subsequent reductions in anxiety at weeks 7 and 10 (βs: .36–.41, *p*s < .01).

Reciprocal Effects of Activation and Anxiety

The third RI-CLPM demonstrated generally acceptable fit to the data, $\chi^2(37) = 47.70$, $p = .11$, CFI = .976, RMSEA = .065, SRMR = .084. Between-persons, there was a significant negative association between random intercepts, $r = -.57$, $p = .01$, indicating that people who reported lower activation

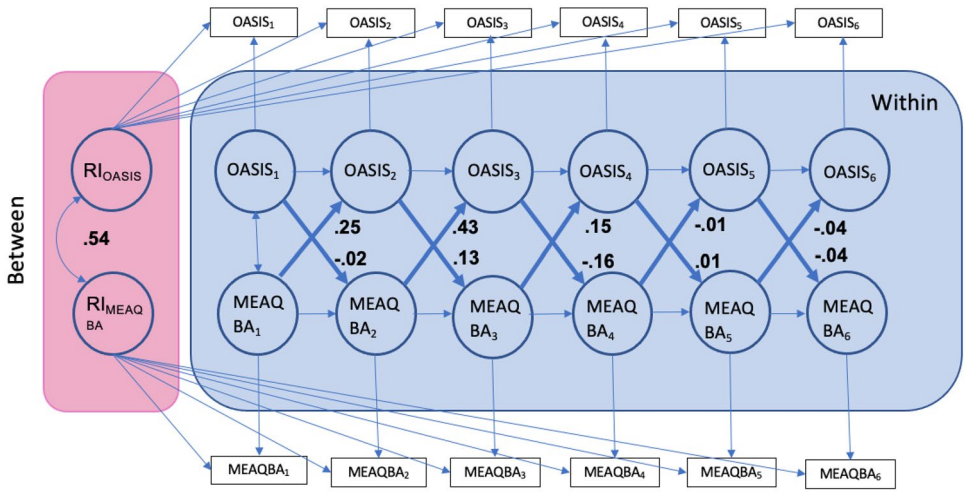

Fig. 2 Random Intercept Cross-Lagged Panel Model (RI-CLPM) of avoidance predicting session-to-session changes in anxiety. Red shaded area indicates between-subject portion, blue shaded area indicates within-subject portion. RI_{OASIS} = random intercept of anxiety. RI_{MEAQBA} = random intercept of avoidance. MEAQ-BA = Multidimensional Experiential Avoidance Questionnaire Behavioral Avoidance subscale, OASIS = Overall Anxiety Severity and Impairment Scale. Bold values on the diagonal arrows indicate Beta weights of latent avoidance predicting anxiety at the same session, controlling for previous session anxiety scores. *$p < .05$; **$p < .01$

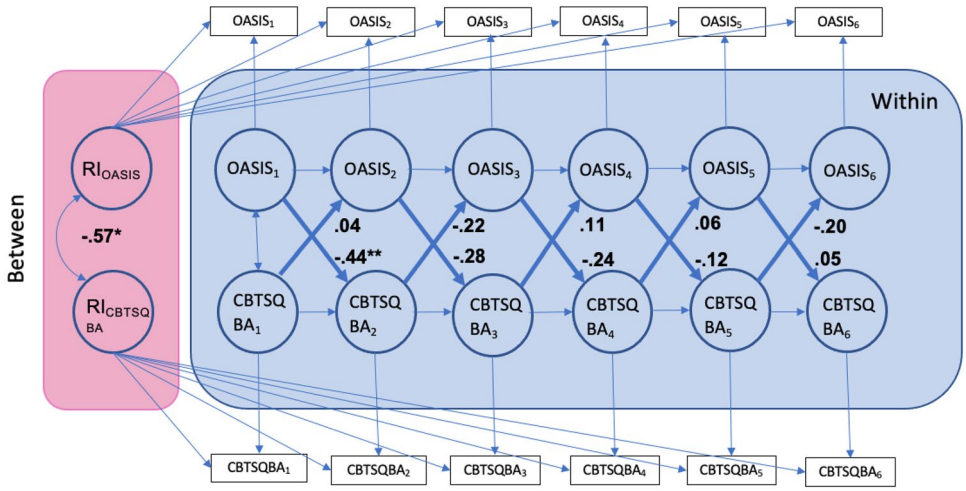

Fig. 3 Random Intercept Cross-Lagged Panel Model (RI-CLPM) of behavioral activation predicting session-to-session changes in anxiety. Red shaded area indicates between-subject portion, blue shaded area indicates within-subject portion. RI_{OASIS} = random intercept of anxiety. RI_{MEAQBA} = random intercept of avoidance. MEAQ-BA = Multidimensional Experiential Avoidance Questionnaire Behavioral Avoidance subscale, OASIS = Overall Anxiety Severity and Impairment Scale. Bold values on the diagonal arrows indicate Beta weights of latent behavioral activation predicting anxiety at the same session, controlling for previous session anxiety scores. *$p < .05$; **$p < .01$

during treatment also reported higher anxiety symptom severity (Fig. 3).

Within-persons, we found minimal evidence of associations between changes in activation and anxiety. Within-person reductions in anxiety at session 1 significantly predicted a subsequent increase in behavioral activation, βs: –.44, *p*s < .05. Numerically, the strongest, small-to-medium-sized effects occurred within the first three sessions, with greater within-person reductions in anxiety predicting subsequent increases in behavioral activation, βs: .24–.28, *p*s > .05. Across the remaining sessions, both sets of reciprocal effects were small or very small, βs: .04–.22, *p*s > .05.

Sensitivity Analyses

When using data from all 12 weeks, there was a significant, negative association between random intercepts ($r = -.55$, $p < .01$), that was similar in size to the corresponding correlation in the six-session model (Fig. S3). We found minimal evidence of associations between changes in activation and anxiety across all 12 weeks. The only significant path was within-person reductions in anxiety at session 1 significantly predicting a subsequent increase in behavioral activation, β: –.34, $p < .05$ (Fig. S3).

Discussion

The goal of the present study was to explore potential associations between behavioral activation, behavioral avoidance, and anxiety symptoms in an adult sample receiving outpatient treatment for transdiagnostic emotional disorders. As activation and avoidance are closely related processes, and are a maintaining factor for emotional disorder symptoms (Fernández-Rodríguez et al., 2018), the results of this study provide preliminary information regarding how change in these processes during therapy affect each other and anxiety symptoms. Between-person results suggested that people who engage in more behavioral avoidance display lower levels of activation, and that people with more severe anxiety symptoms displayed both greater avoidance and lower levels of activation. These results replicate prior research suggesting that lower levels of behavioral activation and greater avoidance play an important role in increasing emotional distress (González-Fernández et al., 2018). Of note, although avoidance and activation are strongly related conceptually, correlations between these processes were moderate in magnitude suggesting that they are related, but distinct.

Additionally, our findings suggest that within-person changes in avoidance significantly predicted within-person changes in activation during the early stages of treatment. However, throughout treatment, we found evidence of a bidirectional within-person association between activation and avoidance. In other words, when people reported less experiential avoidance than their usual levels, they displayed greater activation at the subsequent session *and* when people reported greater activation than their usual levels, they displayed less avoidance at the subsequent session. It is important to note, however, that the average effect of change in avoidance on change in activation was larger than the reverse direction, reducing avoidance may be the most efficient to address both processes. Across all

models, the effects of changes in activation, avoidance, and anxiety on each other were strongest early in treatment. These results add to the growing literature on the timing of changes that occur during treatment and may provide guidance to clinicians on what targets and skills to prioritize early in therapy.

Finally, though most pathways were not statistically significant, trend-level associations emerged in which within-person decreases in avoidance preceded within-person decreases in anxiety, and within-person changes in anxiety preceded within-person changes in activation.

Temporal Changes in Behavioral Activation and Behavioral Avoidance

Behavioral activation has been identified as an important ingredient in transdiagnostic interventions (Meidlinger & Hope, 2017). Activation is thought to break the cycle of avoidance by increasing goal- and value-based activities that result in positive reinforcement, thus increasing the desire to repeat these activities. Research evidence supports this notion as engaging in this therapeutic strategy is associated with re-engagement in daily routines and increased time spend doing rewarding activities (González-Fernández et al., 2018). There is also some evidence that behavioral activation techniques reduce engagement in behavioral avoidance (Martell et al., 2010).

The results of our study provide further information regarding these temporal changes in that decreases in avoidance tended to precede increases in activation. Thus, patients who report a high level of experiential avoidance may benefit from clinicians prioritizing strategies to decrease emotionally-avoidant behavior at the beginning of treatment, as an initial focus on avoidance may result in a greater degree of subsequent activation. Strategies to engage experiential avoidance may include psychoeducation regarding the adaptive nature of emotions, articulating the long-term consequences of avoidant coping, cultivating mindful (present-focused, nonjudgemental) stance toward emotions, and encouraging opposite actions (Barlow et al., 2018; Hayes et al., 2006; Meyer et al., 2018). The intervention provided in the current study, the Unified Protocol, purports to engage aversive reactions to emotions (i.e., experiential avoidance) and includes these strategies (Barlow et al., 2018). Additionally, given that experiential avoidance is the primary target for Acceptance and Commitment Therapy (ACT; Hayes et al., 2006), techniques from this intervention may be useful for patients with high levels of avoidance and low levels of activation (Zhang et al., 2018). In sum, transdiagnostic interventions that focus on avoidance are a worthy approach to treatment for some patients, and may result in greater subsequent gains in behavioral activation during treatment.

Early Change in Psychotherapy

Researchers have demonstrated that changes in patients' symptoms most often occur in the early phase of outpatient psychotherapy (Rubel et al., 2015). This phenomenon is not only important to clinicians' understanding of how patients progress through treatment, but meta-analytic results have also demonstrated that early change in symptoms is positively associated with emotional disorder symptoms at post-treatment (Beard & Delgadillo, 2019). Therefore, identifying early symptom response patterns is useful to shed light on how patients may eventually respond at the conclusion of treatment. The results of our study reiterate the importance of the early phase of therapy, as all models demonstrated that the effects of early changes in behavioral activation, avoidance, and anxiety on each other were strongest across the initial sessions of therapy. As the majority of early response literature focuses specifically on early decreases in symptoms as a predictor of outcome (Beard & Delgadillo, 2019), our findings complement this literature by demonstrating that the temporal relations of change between the transdiagnostic processes of behavioral activation and experiential avoidance appear to influence each other most significantly early in treatment.

It is possible that changes in avoidance and activation may serve as a potential mechanism that contributes to early symptom response for patients with anxiety disorders, though more data are needed. As changes in behavioral activation and avoidance occur and interact across early sessions, breaking the cycle of avoidance and engaging in values-aligned activities may spur early symptom change. However, it is important to note that we did not find consistent, significant effects of changes in avoidance or activation predicting anxiety symptom changes throughout treatment. This lack of significance may be due, in part, to a relatively low sample size for these models, and therefore, further research is necessary to examine the mechanisms that contribute to early symptom change in treatment.

Limitations

Our findings from this study must be considered in light of certain limitations. This study was conducted with participants receiving treatment in a single location who were mostly white, female, and held at least a high school diploma. Replication of this study among participants with a wider range demographic characteristics is warranted to improve generalizability. Previous research has linked improvements in both behavioral activation and avoidance with decreases in anxiety symptoms (Arnaudova et al., 2017), however, our models examining the effect of change in these processes on anxiety symptoms were not

statistically significant. Our sample size may have been too small to adequately identify the effects of changes in these processes on changes in anxiety symptom severity, and thus, we may have been underpowered to detect statistically significant effects. Finally, the use of RI-CLPM analysis results carries with it inherent limitations, as these models rely on certain assumptions. For one, cross-lagged panel analysis assumes that each time point occurred at the exact same time (Hamaker et al., 2015). This study uses treatment data that was collected a similar intervals before each session, though each wave of data at the exact same time in this study.

Conclusion

In this study examining the temporal relations between changes in behavioral activation, avoidance, and anxiety symptom severity during treatment with the Unified Protocol, we identified both between- and within-person relations between these variables. Between-person, we found that less avoidance was associated with greater activation, and higher anxiety symptom severity was associated with both greater avoidance and low activation. Within-persons, we found a bidirectional association between activation and avoidance, though the average effect of change in avoidance on change in activation was larger than the reverse direction, suggesting that change in avoidance tends to predict change in activation. In addition, we also found that the effects of change in one variable on the others were largest early in treatment, in line with extant literature suggesting that most change occurs early in therapy. The results of this study provide information to clinicians regarding the temporal nature of these changing variables in treatment, and suggest that to facilitate increases in behavioral activation, clinicians may prioritize therapeutic strategies that focus on avoidance first in treatment.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s10862-023-10099-9.

Funding M.W.S.'s effort on this project was partially supported by the National Institute of Mental Health under award number K23MH126211. The content is solely the responsibility of the author and does not necessarily represent the official views of the National Institute of Health.

Declarations

Conflicts of Interest The last author receives royalties from Oxford University Press in her role as an author of the Unified Protocol. The first author declares no conflicts of interest.

Experiment Participants All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the institutional review board of the University of Kentucky.

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