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Acceptance and commitment therapy for the treatment of anxiety disorders: a concise review

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This article provides a concise, up-to-date review of the most rigorous randomized clinical trials of acceptance and commitment therapy (ACT) for the treatment of anxiety disorders. We address ACT's efficacy compared to more established cognitive behavioral treatments (CBT) and review recent evidence on mediators and moderators of ACT for anxiety disorders. Reviewing the most rigorous extant studies shows that ACT provides a viable alternative to more established forms of CBT for adult anxiety disorders, specifically for generalized anxiety disorder, social anxiety disorder, and mixed anxiety disorder samples. ACT thus represents an increasingly evidence-based approach for the treatment of anxiety disorders. We conclude by highlighting limitations and future directions for this emerging area.

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The treatment of anxiety disorders represents an area of noteworthy success for traditional cognitive behavioral therapy (tCBT). That is, tCBT represents an empirically supported treatment for each DSM-IV (and presumably DSM-5) anxiety disorder [1,2], with superior performance over general supportive counseling and placebo [3]. What challenges remain, then, for the treatment of anxiety disorders and how might Acceptance and Commitment Therapy (ACT) help to address them?

Remaining challenges include a dearth of evidence-based psychosocial treatment alternatives, a deficiency of knowledge to inform who might do best in which treatment (e.g. treatment moderators), and the need for a theoretical model that is consistently supported in terms of process studies (e.g. treatment mediators), among others. We thus provide an up-to-date review of the most rigorous ACT studies for the treatment of anxiety disorders[1] with an eye toward two questions: first, Is ACT a viable alternative to more established psychosocial treatments for anxiety disorders, such as tCBT? Second, Does ACT help to address additional remaining challenges in treating anxiety disorders, including the need for consistent, theory-driven mediators and moderators?

ACT's efficacy relative to alternative established treatments

In reviewing ACT's efficacy as a treatment for anxiety disorders, we focus on the largest and most rigorous studies, consisting of the four recent randomized clinical trials presented in Table 1 [4••,5••,6••,7••] (see [8••], for a broader review). The first of these studies compared Acceptance-Based Behavioral Therapy (ABBT) to Applied Relaxation for the treatment of generalized anxiety disorder (GAD) over 16 sessions [6••]. ABBT [9•] was based largely on the ACT model with particular emphasis on acceptance and mindfulness. In contrast, Applied Relaxation [10] taught patients to apply progressive muscle relaxation skills whenever early signs of anxiety arose. Both treatments led to similarly robust improvements in GAD severity, quality of life, and depressive symptoms, which were maintained over the six-month follow-up period. Although a power analysis was not reported, this study was similar in size to the Craske *et al.* study [5••], which had statistical power to detect only large group differences. However, effect sizes of treatment-related improvements were very similar between the two conditions. Thus, a predominantly ACT treatment improved GAD and related outcomes to a similar degree as an established relaxation treatment.

The second study compared ACT to tCBT for the treatment of mixed anxiety disorders [4••], that is, adults who met criteria for one or more DSM-IV anxiety disorders. Both protocols included exposure to feared stimuli [11•,12] and six monthly phone check-ins following a 12-session treatment. In the intent-to-treat sample, ACT and tCBT resulted in large, indistinguishable improvements from pre-treatment to post-treatment on principal anxiety disorder severity (blind clinician-rated), quality of life, and psychological flexibility, that

[1] Excluding obsessive compulsive disorder, which is addressed by Twohig, same edition.

Table 1

ACT vs. another active treatment for anxiety disorders: quick reference guide.

RCT study	Sample	Comparison	Main findings	Moderator findings
Hayes-Skelton *et al.*, 2013	GAD	Applied relaxation	No differences at any time point	Did not report
Kocovski *et al.*, 2013	SAD	tCBT (group) and wait list control	No group differences on main outcomes at Post or FU Both active groups > wait list control	Did not report
Arch *et al.*, 2012	Mixed AD	tCBT	No group differences at Post ACT > tCBT for AD severity and psych. flexibility at FU among completers tCBT > ACT on quality of life at FU	ACT > tCBT at high levels of behavioral avoidance ACT > tCBT for those with comorbid mood disorders tCBT > ACT for those wo/ comorbid mood disorders tCBT > ACT at moderate levels of anxiety sensitivity Null for: age, sex, race/ethnicity, type of anxiety disorder, comorbid anxiety disorders, severity of principal anxiety disorder, neuroticism
Craske *et al.*, 2014	SAD	tCBT	No group differences at Post or FU	tCBT > ACT at high levels of experiential avoidance at 9m FU Null for: age, sex, race/ethnicity, comorbid depression, comorbid anxiety disorders, perceived control, extroversion, neuroticism

Abbreviations: RCT = randomized clinical trial, ACT = acceptance and commitment therapy, tCBT = traditional cognitive behavioral therapy, SAD = social anxiety disorder, GAD = generalized anxiety disorder, AD = anxiety disorders, FU = follow up, the symbol '>', for example ACT > tCBT, tCBT, indicates that ACT showed better outcomes than tCBT.
Note: We did not include several significant moderator interactions that failed to show significant between-group differences at any point along the moderator.

were maintained over the nine-month follow-up. During follow-up, ACT led to greater improvements in principal anxiety disorder severity and psychological flexibility than tCBT among adults who completed treatment, whereas tCBT led to higher quality of life than ACT. Power analyses indicated that this study was adequately powered to detect group differences of medium size, that is, it was reasonably powered. In conclusion, both ACT and tCBT provided efficacious treatment for heterogeneous anxiety disorders.

This study also examined how two processes (mediators) assessed regularly during treatment — anxiety sensitivity and cognitive defusion — related to post-treatment outcomes [13]. Session-by-session reductions in anxiety sensitivity (purported to underlie change in tCBT) occurred in both treatment groups, though at a greater rate in ACT, mediating worry outcomes across both groups. Session-by-session increases in cognitive defusion (purported to underlie change in ACT) also occurred in both groups, at a nearly greater rate in ACT, mediating post-treatment worry, behavioral avoidance, quality of life, and depression outcomes across both groups. In conclusion, findings indicated substantial overlap in treatment mechanisms, with outcomes more consistently predicted by the ACT-based than tCBT-based mediator. Thus, although cognitive defusion represents a central ACT process, this study suggests that it may be at least as important in tCBT [see 14].

The final two studies compared ACT-based interventions to traditional tCBT for the treatment of (generalized) social anxiety disorder (SAD). The first SAD study compared 12 two-hour group sessions of Mindfulness and Acceptance-Based Group Therapy (MAGT) to group tCBT or a waitlist control [7••]. The authors described MAGT as an 'ACT-based' approach that included brief mindfulness via exercises from mindfulness-based cognitive therapy [13]. Both treatments included exposure to feared stimuli, and the number of participants was sufficiently large (see Table 1) to detect medium-sized group differences. Both led to greater improvements than the waitlist control on social phobia symptoms, depression, and valued living, with gains maintained at three-month follow-up. Although the authors did not examine mediators of outcome, they noted significant increases in mindfulness and acceptance, and decreases in rumination, across both treatment groups. They concluded that both ACT and tCBT facilitated a more accepting, observer perspective to internal experience (see [14], for a similar perspective).

The second SAD study randomized participants to 12 individual sessions of ACT or tCBT, or to a waitlist control [5••]. The ACT [11•] and tCBT protocols were nearly identical to those used by Arch *et al.* [4••], including use of exposure, but focused exclusively on social anxiety. Compared to the waitlist control, both treatments resulted in large pre-treatment to post-treatment improvements in principal anxiety disorder severity (blind clinician-rated), other symptom outcomes, and quality of life, which were maintained through nine-month follow-up. Thus, across both studies of ACT vs. tCBT for SAD [5••,7••], both treatments resulted in similarly robust improvements for social anxiety disorder. This study, however, was powered to detect only large group differences.

In summary, in each of the four reviewed studies, ACT provided a viable alternative to established treatments for anxiety disorders, most commonly tCBT. Benefits were evident across mixed anxiety disorder, GAD, and SAD samples, and endured through follow-up periods of three to nine months.

Treatment moderation in comparing ACT to established treatments

Given that ACT and several other cognitive and behavioral treatments have gained empirical support for treating anxiety disorders, it can be challenging to decide which treatment to use with any specific client. Is it just a matter of personal preference, or do certain patient–level characteristics make someone a particularly good candidate for ACT? Rather than solely investigating *whether* treatments work, the field has increasingly begun examining *for whom* and *under what conditions* they work [15,16].

The first step to addressing such questions involves identifying treatment *moderators* — baseline characteristics that distinguish people who respond differently to one treatment versus another [17]. This contrasts with treatment *predictors*, which provide information about how baseline characteristics affect treatment outcomes *overall*, regardless of treatment type. For example, if we compared two treatments and found that males improved more than females in both treatments, then sex would be considered a treatment predictor. In contrast, if males improved more than females in only one treatment condition, but females improved more than males in the other treatment condition, then sex would be considered a treatment moderator. If replicated, we could then use the treatment moderator information to help inform which treatment to use for a given client.

Although research on treatment moderation for anxiety disorders is still in its infancy, we identified four papers [4••,18•,19,20] that examined treatment moderation within two of the trials described above [4••,5••]. We highlight moderators that can be readily assessed in clinical practice settings (see [19,20] for findings on physiological moderators).

Severity and comorbidity

In the mixed anxiety disorder treatment study [18•], ACT outperformed tCBT among those with comorbid (co-occurring) mood disorders, whereas tCBT outperformed ACT among those without comorbid mood disorders. This finding is consistent with the notion that ACT focuses more broadly on shifting the relationship with internal experience whereas tCBT focuses more narrowly on improving anxiety symptoms. However, in the larger SAD study [5••], comorbid depression marginally predicted worse outcomes overall, but did not differentially predict outcomes between treatments (e.g. served as a predictor but not a moderator). Severity of the principal anxiety disorder, type of anxiety disorder, and presence of comorbid anxiety disorders, failed to moderate outcomes in either study. In summary, there is no evidence that the severity or number of anxiety disorders moderates outcomes, but in one of two studies ACT outperformed tCBT among those with comorbid depression.

Cognitive factors

Baseline levels of anxiety sensitivity moderated outcomes in the mixed anxiety disorders study [18•]. Specifically, tCBT outperformed ACT at moderate levels of anxiety sensitivity, but no differences emerged between conditions at low or high levels of anxiety sensitivity. Within groups, tCBT performed best at moderate levels whereas ACT performed similarly across all levels of anxiety sensitivity. It is possible, then, that treatments designed to target certain pathological processes, such as anxiety sensitivity, do not always perform best among the patients who endorse high levels of such processes. In the SAD study, perceived control failed to moderate outcomes whereas fear of negative evaluation predicted different outcome trajectories in ACT vs. tCBT but failed to predict between-group differences at any point along the trajectories [5••].

Behavioral factors

Baseline experiential avoidance was assessed with the Acceptance and Action Questionnaire (AAQ; [21]) in two studies [5••,18•] and behaviorally through duration in a prolonged hyperventilation task [19] in one of these studies. Among those with higher self-reported experiential avoidance, tCBT outperformed ACT at follow-up in the SAD study [5••] but group differences did not reach significance in the mixed anxiety disorder study [18•]. Among those higher in behaviorally assessed avoidance, ACT outperformed tCBT (in the mixed anxiety disorder study [19]). Thus, the role of experiential avoidance in moderating tCBT and ACT outcomes depends at least in part on how it is assessed.

Personal characteristics

Neither sociodemographic variables (age, sex, race/ethnicity) nor personality traits (extraversion, neuroticism) led to different outcomes in ACT vs. tCBT for anxiety disorders [5••,18•].

Summary

Based on findings from the two studies examining moderators of ACT versus tCBT for anxiety disorders [5••,18•], there is no evidence that severity of the principal anxiety disorder, comorbid anxiety disorders, perceived control, personality traits, or sociodemographic factors moderated treatment outcomes: that is, predicted different outcomes by treatment type. ACT outperformed tCBT for those with higher levels of behavioral avoidance in one study, and those with comorbid mood

disorders in one of two studies. In contrast, tCBT outperformed ACT among those with moderate levels of anxiety sensitivity, those without comorbid mood disorders in one study, and those with higher levels of self-reported experiential avoidance in one of two studies.

Other recent applications of ACT for anxiety disorders

Children and adolescents

To date, treatment studies on ACT for anxiety disorders have focused almost exclusively on adults, with the exception of a small number of youth case studies. No clinical trials of ACT for children and adolescents have been completed, but there is at least one underway for those with mixed anxiety disorders [22].

Conclusions

Recent evidence demonstrates that ACT represents an increasingly evidence-based approach for the treatment of anxiety disorders. Rigorous studies suggest that ACT is a viable alternative to established treatments, specifically to tCBT for SAD and mixed anxiety disorder samples, and to applied relaxation for GAD. The sole study that addressed treatment mediation demonstrated that the ACT-hypothesized process of cognitive defusion mediated change in multiple outcomes across both ACT and tCBT, suggesting that this process is common to both therapies [13]. Thus, although limited by the number of studies, ACT has begun addressing the need for theory-derived explanations of treatment process. The two studies that assessed treatment moderators identified several baseline characteristics that predicted whether patients did better in ACT or tCBT, but they were not wholly consistent [5••,18•,19,20]. Thus, only limited progress has been made on understanding which treatment best serves a particular client. Optimistically, ACT benefitted diverse patients across a range of sociodemographic factors and at least in one study, led to superior outcomes for those with comorbid depression.

Current limitations include the fact that the reviewed studies did not all follow the same treatment protocol or hexaflex emphasis, making it difficult to ascertain whether they produced change via the same therapeutic processes. Second, given the small number of rigorous extant studies, we cannot yet determine whether these findings will characterize other individual anxiety disorder samples. However, given that ACT performed similarly to more established alternatives in all four studies provides grounds for cautious optimism. Third, although these represent the largest and most rigorous studies for the ACT-based treatment of anxiety disorders, half were underpowered to detect any but large group differences, emphasizing the need for more robustly powered future studies to more definitively discern differences between ACT and alternative treatment approaches. Fourth, extant studies have been limited to live therapy. An important future direction will be to develop and assess more readily disseminable forms of ACT for anxiety disorders, such as online, telehealth, or smartphone-based approaches.

In brief, ACT has begun to address remaining empirical challenges and provide an evidence-based alternative to more established psychological treatments for adult anxiety disorders.

Conflict of interest

Nothing declared.

References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- • of special interest
- •• of outstanding interest

1. Norton PJ, Price EC: **A meta-analytic review of adult cognitive-behavioral treatment outcome across the anxiety disorders**. *J Nerv Ment Dis* 2007, **195**:521-531.

2. Butler AC *et al.*: **The empirical status of cognitive-behavioral therapy: a review of meta-analyses**. *Clin Psychol Rev* 2006, **26**:17-31.

3. Hofmann SG, Smits JAJ: **Cognitive-behavioral therapy for adult anxiety disorders: a meta-analysis of randomized placebo-controlled trials**. *J Clin Psychiatry* 2008, **69**:621-632.

4. •• Arch JJ *et al.*: **Randomized clinical trial of cognitive behavioral therapy versus acceptance and commitment therapy for the treatment of mixed anxiety disorders**. *J Consult Clin Psychol* 2012, **80**:750-765.

This study, one of the largest to date, compared ACT and tCBT for the treatment of heterogeneous anxiety disorders and demonstrated similar robust effects of both at post-treatment, with group differences emerging on several outcomes at follow up.

5. •• Craske MG *et al.*: **Randomized controlled trial of cognitive behavioral therapy and acceptance and commitment therapy for social anxiety disorder: outcomes and moderators**. *J Clin Consult Psychol* 2014. (Epub ahead of print).

This study compared ACT, tCBT, and waitlist control for the treatment of social anxiety disorders, demonstrating large effects of the active treatments relative to waitlist control, with no active treatment differences at any assessment point. Moderator analyses demonstrate that at nine-month follow up, those with lower reported psychological flexibility showed greater improvement following tCBT than ACT.

6. •• Hayes-Skelton SA, Roemer L, Orsillo SM: **A randomized clinical trial comparing an acceptance-based behavior therapy to applied relaxation for generalized anxiety disorder**. *J Consult Clin Psychol* 2013, **33**:965-978.

This study compared an ACT-based treatment that emphasized mindfulness and acceptance processes to applied relaxation for the treatment of GAD, demonstrating similarly large improvements outcomes across both treatments.

7. •• Kocovski NL *et al.*: **Mindfulness and acceptance-based group therapy versus traditional cognitive behavioral group therapy for social anxiety disorder: a randomized controlled trial**. *Behav Res Ther* 2013, **51**:889-898.

This is the largest study to date comparing ACT and tCBT for social anxiety disorder and treatment was delivered in groups. Both treatments showed greater improvements than a waitlist control group but did not differ from one another.

8. •• Swain J *et al.*: **Acceptance and commitment therapy in the treatment of anxiety: a systematic review**. *Clin Psychol Rev* 2013, **33**:965-978.

In this review, the authors review all published and known unpublished studies that use ACT to treat anxiety disorders or anxiety symptoms. It thus provides a longer and more detailed review of ACT for anxiety disorders than the current briefer review.

9. • Roemer L, Orsillo SM: *Mindfulness- and Acceptance-Based Behavioral Therapies in Practice*. New York, NY: Guilford Press; 2009, .

In this book, the authors present the ACT-based and mindfulness-based treatment approach that they used to the Hayes-Skelton *et al.* treatment study.

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11. • Eifert GH, Forsyth JP: *Acceptance and Commitment Therapy for Anxiety Disorders: A Practitioner's Treatment Guide to Using Mindfulness, Acceptance, and Values-Based Behavior Change Strategies*. New York, NY: Guilford Press; 2005, .

This therapist manual presents the ACT for anxiety disorders approach used in the Arch *et al.*, 2012, and Craske *et al.*, 2014, treatment studies. Treatment is presented in a straightforward, session-by-session manner.

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17. Kraemer HC *et al.*: **Mediators and moderators of treatment effects in randomized clinical trials**. *Arch Gen Psychiatry* 2002, **59**:877-883.

18. • Wolitzky-Taylor KB *et al.*: **Moderators and non-specific predictors of treatment outcome for anxiety disorders: a comparison of cognitive behavioral therapy to acceptance and commitment therapy**. *J Consult Clin Psychol* 2012, **80**:786-799.

We have chosen to highlight this paper as an example of a rigorously performed examination of treatment moderators for ACT vs. tCBT. It draws from the same treatment data as the Arch *et al.*, 2012 study.

19. Davies CD *et al.*: **Physiological and behavioral indices of emotion dysregulation as predictors of outcome from cognitive behavioral therapy and acceptance and commitment therapy for anxiety**. *J Behav Ther Exp Psychiatry* 2015, **46**:35-43.

20. Niles AN *et al.*: **Attentional bias and emotional reactivity as predictors and moderators of behavioral treatment for social phobia**. *Behav Res Ther* 2013, **51**:669-679.

21. Hayes SC *et al.*: **Measuring experiential avoidance: a preliminary test of a working model**. *Psychol Rec* 2004, **54**:553-578.

22. Swain J *et al.*: **Acceptance and commitment therapy for anxious children and adolescents: study protocol for a randomized controlled trial**. *Trials* 2013, **14**:1-12.