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## Relationships Between Amount of Post-Intervention of Mindfulness Practice and Follow-up Outcome Variables in an Acceptance-Based Behavior Therapy for Generalized Anxiety Disorder: The Importance of Informal Practice

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### Abstract

Because most behavioral treatments are time-limited, skills and practices that foster long-term maintenance of gains made during treatment are of critical importance. While some studies have found mindfulness practice to be associated with improvements in outcome variables over the course of treatment (Vettese et al., 2009), very little is known about the effects of continued mindfulness practice following treatment termination. The current study examined the relationships between separate single item measurements of three types of mindfulness practices (formal, informal, and mindfulness of breath in daily life) and longer-term outcomes in worry, clinician-rated anxiety severity, and quality of life following treatment with an acceptance-based behavior therapy (ABBT) for Generalized Anxiety Disorder (GAD) in two separate treatment studies. Results from Study 1 showed that at 9-month follow-up, amount of informal mindfulness practice was significantly related to continued beneficial outcomes for worry, clinician-rated

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anxiety severity, and quality of life. Similarly, in Study 2, at 6-month follow-up informal mindfulness practice was significantly related to continued beneficial outcomes for anxiety severity and worry, and at 12-month follow-up informal mindfulness practice was significantly related to continued beneficial outcomes for quality of life and worry, and mindfulness of breath was significantly related to quality of life. When results from the final time point in both studies were combined, informal practice was significant related to all three outcome variables, and mindfulness of breath was significantly related to worry and quality of life. Formal practice was not significantly related to outcomes in either study, or in the combined sample. These findings support the further study of informal mindfulness practices as important tools for continued beneficial clinical outcomes following treatment for people with a principal diagnosis of GAD.

### Keywords

Informal Mindfulness Practice; Formal Mindfulness practice; Generalized anxiety disorder; Worry; Quality of life; Acceptance-based behavior therapy

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### Introduction

The use of between-session homework assignments in the context of therapy for the development of specific skills is a longstanding practice. The concept of self-help assignments in psychotherapy emerged in the literature as early as the 1930's (Dunlop, 1936). Between-session homework assignments are still a cornerstone of many cognitive-behavioral treatments (CBT), and are conceptualized as practices that lead to the development and utilization of specific health-promoting skills (Dozois, 2010). By providing training in skills that promote flexible and adaptive functioning, clients may be able to generalize the gains made in treatment to difficulties that arise beyond treatment termination, potentially preventing relapse. A recent meta-analysis comparing cognitive-behavioral treatments, with and without between session homework, found significantly larger effect sizes on outcome variables for treatments with homework (Kazanzis, Whittington, & Dattilio, 2010). While this finding provides some evidence that *between-session homework* leads to better outcomes at post-treatment, less is known about the potential impact of *post-treatment continued practice of homework exercises* on longer-term mental health.

Mindfulness practices, with roots in Buddhist psychology and meditation practices dating back over two and a half millennia, have been increasingly applied as between-session homework in Western therapeutic contexts over the past few decades (Deatherage, 1975; Hayes, Follette, & Linehan 2004). Formal mindfulness practices may take the form of the more traditional time-delineated seated meditation as well as mindful yoga and other specific meditative exercises, while informal practices refer to intentionally applying mindful awareness to daily activities such as washing the dishes, cooking, or driving (Kabat-Zinn, 1990). Mindfulness of breathing refers to even briefer moments of paying attention to one's breath throughout the day, regardless of the context or situation.

Many of the most-studied mindfulness- and acceptance-based interventions assign considerable between-session mindfulness practice. Mindfulness-based stress reduction

(MBSR) and interventions modeled closely after the structure of MBSR, such as Mindfulness-Based Cognitive Therapy (MBCT), often assign 45 minutes of formal practice per day, 6 to 7 days a week (Kabat-Zinn 1990; Segal, Williams, and Teasdale 2002). Other treatments such as Acceptance and Commitment Therapy (ACT) and Dialectical Behavioral Therapy (DBT) are less directly focused on the practice of formal mindfulness meditation and may incorporate more informal mindfulness practices into between-session homework (Hayes & Smith, 2005; Linehan, 1993). Such interventions, including the acceptance-based behavior therapy (ABBT) for GAD investigated in the current two studies, incorporate both formal and informal practices in an attempt to flexibly tailor practice types and amounts to match client skill levels, preferences, and different life contexts (Roemer & Orsillo, 2009).

Although between-session mindfulness practice is presumed to be an important component of these approaches to treatment, clients present to treatment from diverse cultural and socioeconomic statuses and some may find it impossible to commit to regularly scheduled, time intensive practices (Sobczak & West, 2013). For example, a single-mother working multiple jobs to support her family might have very little extra time for lengthy daily formal practices. Thus, research examining both the statistical and clinical impact of the amount and type of practice on psychological well-being is needed to guide the development empirically-informed clinical recommendations. A meta-analysis of mindfulness-based group intervention studies by Vettese et al. (2009) found that fewer than 25% of the 96 studies included in their analysis provide data on the relationship between amount of reported practice and outcomes. Thirteen (54%) of the 24 studies that did examine this relationship found that more practice was associated with better outcome; the remaining 11 studies that conducted these kinds of analyses did not. Importantly, the majority of the studies included in this meta-analysis assessed only formal mindfulness meditation, and thus cannot inform our understanding of the potential relationship of informal practice to clinical outcomes. While evidence is mixed, and moderator variables such as “quality” of practice may help explain some of the inconsistent findings, some evidence points to between-session mindfulness practice being related to improvements in outcomes.

While investigations of mindfulness practice and outcomes during treatment are limited, our understanding of such practices in relation to longer-term outcomes post-treatment is even more meager. Only a few studies have looked at mindfulness practice during follow-up periods in relation to longer-term outcomes and nearly all of them are studies of MBSR or closely-related treatments. For 19 organ-transplant patients who completed an 8-week MBSR program, minutes of total formal practice during a 3-month follow-up period was significantly correlated with continued improvements in sleep quality and anxiety measures, while depression gains were not maintained and were unrelated to amount of formal practice (Gross et al. 2004). Sephton et al. (2007) found that, in a community sample of women with fibromyalgia who completed an MBSR program, those who reported continuing to engage in formal mindfulness practice at the two-month follow-up period reported the greatest reduction in depressive symptoms. In a study of Mindfulness-Based Cognitive Therapy (MBCT), improvements in depressive symptoms over follow-up periods ranging from 12 to 34 months were significantly associated with both duration and frequency of post-treatment formal and informal mindfulness practices, although the authors did not describe their practice measures (Mathew et al. 2010). The remaining studies, three with participants in

MBSR programs (Davidson et al. 2004; Kabat-Zinn et al. 1987; 1992) and one following a 10-day intensive mindfulness meditation retreat (Ostafin et al. 2006), did not find significant relationships between amount of post-intervention practice and longer-term outcomes. These studies found significant improvements in outcome variables attributable to intervention participation, and some failed to find significant relationships between practice amounts and follow-up outcomes, however, methods of quantifying practice levels varied widely. In particular, measurements of informal practice were rarely included. Since the purpose of most mental health treatments is to promote long-term adaptive functioning following treatment termination, continued investigation of mindfulness practices and outcome variables during follow up periods may help guide treatment to maximize long-term effectiveness.

The present study analyzed follow-up data from two randomized control trials exploring the efficacy of an acceptance-based behavior therapy (ABBT) for generalized anxiety disorder (GAD). The main results for study 1, which were reported by Roemer, Orsillo, and Salters-Pednault (2008), showed large magnitude improvements at post treatment and maintenance of gains across follow-up time points for worry, clinician-rated severity of GAD symptoms, and quality of life. To investigate the role of continued mindfulness practice in longer-term outcomes following the 16-week treatment in Study 1, we examined the relationships between the self-reported amount of formal mindfulness practice, informal mindfulness practice, and mindful breathing and changes in GAD severity, worry, and quality of life from pre-treatment to 9 months after the completion of treatment. The main results for Study 2, which are reported by Hayes-Skelton, Roemer, and Orsillo (2013), showed significant improvements at post treatment and maintenance of gains through the 6-month follow-up time point for worry, severity of GAD symptoms, and quality of life. To replicate the procedures of Study 1 and extend the time period, we examined the same relationships from pre treatment to 6 and 12 months after the completion of treatment in Study 2. To our knowledge this is the first study looking at the relation of continued formal and informal mindfulness practice and follow-up outcomes in an individual ABBT for people with a principal diagnosis of GAD.

## Study 1

### Methods

**Participants**—Participants in this study were drawn from a randomized controlled study in which clients with a principal diagnosis of GAD were randomized to receive either the treatment or be on a waitlist prior to receiving the treatment (Roemer et al., 2008). Data were analyzed from the 15 individuals who completed 16 sessions of ABBT and a 9-month follow-up assessment. All 15 self-identified as White, 9 (60%) identified their gender as female, 6 (40%) as male. The mean age of the sample was 38.27 (SD=13.47; range 21–66) years. All participants began treatment with a principal diagnosis of GAD and on average 2.56 (SD=1.59) comorbid diagnoses, with depressive disorders ( $n=9$ ), Social Anxiety Disorder ( $n=8$ ), and specific phobias ( $n=5$ ) being the most common. Additionally, clients were included if they were 18 years of age or older, did not report current suicidal intent, or meet criteria for bipolar disorder, substance dependence, or psychotic disorders at pre-

treatment. Informed consent was obtained from each participant. Refer to Roemer, Orsillo, and Salters-Pednault (2008) for more details on methods and design of the original outcome study.

### Measures

**Anxiety Disorders Interview Schedule-IV (ADIS-IV):** The ADIS-IV (DiNardo, Brown, & Brown, 1994) is a semi-structured diagnostic interview used to determine current and lifetime DSM-IV diagnostic status. For GAD, the ADIS-IV has demonstrated adequate reliability ( $\alpha = .67$ ; Brown, DiNardo, Lehmann, & Cambell, 2001). Independent assessors gave the ADIS-IV-L (lifetime version) at pre-treatment and the ADIS-IV (current) at the 9-month follow-up assessment. Both versions include a clinician's severity rating (CSR; ranging from 0 to 8, with 4 or greater indicating clinical severity) for each diagnosis received. Independent assessors were post-doctoral fellows or graduate students, unaware of treatment condition, trained in the administration and scoring of the ADIS. Diagnoses were confirmed in a consensus meeting with a doctoral-level psychologist (removed for blinding) and by therapists.

**Penn State Worry Questionnaire (PSWQ):** The PSWQ (Meyer, Miller, Metzger, and Borkovec 1990) is a well-established 16-item self-report measure of trait excessive worry, which demonstrated good internal consistency with Cronbach's  $\alpha$ 's of 0.80 at pre-treatment and 0.92 at 9 months.

**Quality of Life Inventory (QOLI):** The QOLI (Frisch, Cornwell, Villanueva, & Retzlaff, 1992) is a 32-item self-report measure assessing the degree of importance and level of satisfaction with each of 16 areas of life, which demonstrated good internal consistency with Cronbach's  $\alpha$ 's of 0.79 at pre-treatment and 0.79 at 9 months.

**Mindfulness Practice Measure:** Nine months after treatment, participants reported their levels of engagement in any type of mindfulness activity. Three questions asked participants how often they practiced formal mindfulness, informal mindfulness, or mindful breathing since the previous assessment time point. Two questions asking about mindful breathing ("How often have you focused on your breath while doing your daily activities?") and informal mindfulness practice ("How often have you practiced informal mindfulness meditation?") had five Likert scale item response options (1= never, 2 = once or twice a week, 3 = three times a week or more, 4 = nearly every day, 5 = several times a day). The question about formal practice ("How often have you practiced formal mindfulness meditation?") had three Likert scale item response options (1= never, 2 = once or twice a week, 3 = three times a week or more).

**Treatment—**This acceptance-based behavior therapy (ABBT) is a 16-week individualized treatment for people with a principal diagnosis of GAD. ABBT focuses on helping clients develop a more accepting relationship with their unwanted internal experiences, increase engagement in valued life actions, and develop mindfulness skills to help facilitate these processes and decrease experiential and behavioral avoidance. Each session begins with a mindfulness exercise, initially chosen by the therapists, with clients choosing exercises as

therapy progresses. Clients are asked to do formal and informal practices of their choice between sessions, although no set number of minutes of practice is required (Roemer & Orsillo, 2009). For more details on the treatment and the therapists in this study, please refer to Roemer, Orsillo, and Salters-Pednault (2008).

## Results

Means and standard deviations of all variables at pre-treatment and 9-month follow up time points are shown in Table 1. All data were tested for skewness and kurtosis and were found to be within the normal range (Tabachnick & Fidell, 2006).

To control for pre-treatment levels, residualized change scores were calculated for all outcome variables at the 9-month follow up time point. Residualized change scores are calculated by regressing follow-up scores on pre-treatment scores, and saving the unstandardized residuals. The residual scores represent changes in a variable over that time point that is above and beyond variability that is attributable to where they were at pre-treatment. To examine the relationships between continued mindfulness practice and longer-term outcomes, and because of the restricted range of the practice variables, Spearman correlations ( $\rho$ ) were calculated between formal mindfulness practice, informal mindfulness practice, and mindful breathing and residualized change scores for GAD severity (CSR), worry (PSWQ), and quality of life (QOLI) scores at the 9 month follow up time point (see Table 2). At 9-month follow up informal mindfulness practice was significantly negatively correlated with residual changes in worry [ $\rho(15) = -0.55, p = 0.04$ ], GAD severity [ $\rho(15) = -0.59, p = 0.02$ ], and quality of life [ $\rho(15) = 0.55, p = 0.04$ ]. While not statistically significant, there was a medium to large effect size for the correlation between formal mindfulness practice and GAD severity [ $\rho(15) = -0.44, p = 0.10$ ] (Cohen, 1992). Additionally, there were medium to large effect sizes for correlations between mindful breathing and quality of life and worry [ $\rho(15) = 0.32, p = 0.24$ ; and  $\rho(15) = -0.40, p = 0.14$ , respectively]. All relationships were in the expected directions except for the relationship between formal mindfulness practice and quality of life, which showed a non-significant negative correlation with a very small effect size [ $\rho(15) = -0.07, p = 0.80$ ]. No other correlations were statistically significant.

## Study 2

### Methods

**Participants**—This study analyzed data from a second randomized controlled trial in which clients with a principal diagnosis of GAD were randomly assigned to receive either ABBT or applied relaxation (Hayes-Skelton, Roemer, & Orsillo, 2013). Data from 25 participants who completed ABBT, a pre assessment, and a six-month follow up assessment are analyzed here (19 participants are included in the analyses of 12-month follow-up). Six-month follow up participants' ages ranged from 19 – 65 ( $M = 35.24, SD = 12.88$ ). The sample included 18 (72%) women and 7 (28%) men. Two (8%) participants identified as gay or lesbian and 23 (92%) identified as heterosexual. Two (8%) participants racially identified as Black, 1 (4%) participant identified as biracial (Asian and White), 1 (4%)



participant identified as Asian Indian, 2 (8%) participants identified as White/Latino, and 19 (76%) participants identified as White/Non-Latino.

**Measures**—The same measures were used in Study 2 as were used in Study 1. Data from pre (for outcome measures) and 6 and 12-month follow-up (for all measures) were used. The PSWQ demonstrated good internal consistencies at all time-points (0.83 at pre, 0.97 at 6-month follow-up, and 0.90 at 12-month follow-up). For the QOLI, internal consistencies were 0.79 at pre, 0.87 at 6-month follow-up, and 0.89 at 12-month follow-up.

## Results

Means and standard deviations of all variables at pre-treatment and 6-month and 12-month follow-up time points are shown in Table 3. All data were tested for skewness and kurtosis and were found to be within the normal range (Tabachnick & Fidell, 2006).

To control for pre-treatment levels, residualized change scores were calculated for all outcome variables at 6-month and 12-month follow-up time points as in Study 1. To examine the relationships between mindfulness practices and longer-term outcomes, Spearman correlations were calculated between mindfulness practice single items (informal mindfulness practice, formal mindfulness practice, and mindful breathing) and residualized change scores for GAD severity (CSR), worry (PSWQ), and quality of life (QOLI) scores at the 6-month and 12-month follow-up time points (see Table 4).

At 6-month follow-up, participants' informal mindfulness practice scores were significantly negatively correlated with residual changes in GAD severity [ $\rho(25) = -0.55, p = 0.005$ ] and worry [ $\rho(22) = -0.46, p = 0.03$ ]. While not statistically significant, there was also a medium effect size for the correlation between informal mindfulness practice and quality of life [ $\rho(23) = 0.36, p = 0.09$ ] at 6-month follow-up (Cohen, 1992). No other correlations were statistically significant. All relationships were in the expected directions.

At 12-month follow-up, participants' mindful breathing and informal mindfulness practice were significantly positively correlated with quality of life [ $\rho(19) = 0.65, p = 0.002$  and  $\rho(19) = 0.55, p = 0.016$ , respectively]. Additionally, informal mindfulness practice was significantly negatively correlated with worry [ $\rho(19) = -0.49, p = 0.048$ ]. Finally, while not statistically significant, there were medium to large effect sizes for the correlations between mindful breathing and worry [ $\rho(17) = -0.45, p = 0.07$ ] and GAD severity [ $\rho(17) = -0.38, p = 0.13$ ], informal mindfulness practice and GAD severity [ $\rho(17) = -0.43, p = 0.08$ ], and formal practice and quality of life [ $\rho(19) = 0.36, p = 0.13$ ]. No other correlations were statistically significant. All relationships were in the expected directions.

As an additional post-hoc analysis, we combined the data from the latter two time-points from both samples to increase sample size and the power to detect significant relationships. The combined sample (9-month follow-up data from Study 1 and 12-month follow-up data from Study 2) consisted of 34 participants. As in the previous analyses, Spearman correlations were calculated for each of the three mindfulness practice items and residualized change scores for GAD severity (CSR), worry (PSWQ), and quality of life (QOLI) scores (see Table 5). For the combined sample, participants' mindful breathing

scores were significantly correlated with residual changes in worry [ $\rho(32) = -0.42, p = 0.02$ ] and quality of life [ $\rho(34) = -0.52, p = 0.002$ ]. Informal mindfulness practice scores were significantly correlated with residual changes in worry [ $\rho(32) = -0.49, p = 0.004$ ], GAD severity [ $\rho(32) = -0.51, p = 0.003$ ] and quality of life [ $\rho(34) = -0.57, p < .001$ ]. Formal practice scores were not significantly related to any outcome variables in the combined sample.

## Discussion

This study examined the relationship between post-intervention amount of home mindfulness practice and longer-term improvements in severity of anxiety, worry, and quality of life in two separate samples of individuals who received an acceptance-based behavior therapy (ABBT) for people with a principal diagnosis of Generalized Anxiety Disorder (GAD). The convergence of findings across the two samples suggests that, for people with GAD, amount of informal mindfulness practice and mindful breathing may be related to longer-term improvements in GAD severity, worry, and quality of life. Combining the 9 and 12-month follow-up data from both samples provided a larger sample size to detect significant relationships. The strong significant relationships between informal practice and all outcomes, and mindful breathing with worry and quality of life confirm the potential importance of informal mindfulness practices in relation to long-term follow-up outcomes. These results support previous findings that mindfulness practice amounts were related to levels of outcome variables during post-treatment periods on measures of anxiety (Gross et al., 2004). Because of the present-focused nature of mindfulness practice, it may be an effective long-term skill to counter the future-oriented nature of anxiety and worry. This study also provides evidence that mindfulness practice during follow up treatments may be related to improvements in quality of life, an outcome that to our knowledge has not been assessed in relation to mindfulness practice during follow-up periods. To our knowledge all previous investigations of mindfulness practice and follow-up period outcomes have involved group-programs based on the MBSR model. This study may be the first to examine these relationships in an individual acceptance-based behavioral treatment for people with a principal diagnosis of GAD and a range of comorbid diagnoses.

Furthermore, this study highlights the potential importance of informal mindfulness practices in improving longer-term outcomes. Informal practice showed the most consistent findings across studies and outcome variables. As most previous studies, including the only meta-analysis on mindfulness practice and outcomes (Vettese et al., 2009), have focused primarily on formal practices, this study points to the need to understand the contributions of informal practices to outcome improvements. Informal practices can be conceptualized as a way of bringing mindfulness more directly into everyday situations, which may help individuals apply mindfulness skills in difficult situations during daily life (Kabat-Zinn, 1990). Additionally, informal practices may be more flexibly applied to busy life circumstances that preclude time for extensive formal practice. These findings provide preliminary support for the ways that mindfulness is incorporated into ACT, DBT, and other ABBTs, in which formal practice is not emphasized as heavily as in MBSR and MBCT.



The results of the current study suggest a potential mechanism for the maintenance of symptom gains and/or continued improvements in outcomes seen during follow-up periods across mindfulness and acceptance-based treatment studies (Forman et al., 2012; Hofmann et al., 2010; Powers, Zum Vörde Sive Vörding, & Emmelkamp, 2009; Vowles, McCracken, & O'Brien, 2011). Given the experiential nature of such treatments, informal practice and mindful breathing in daily life may help facilitate longer-term symptom improvements in these treatments by helping clients continue to engage experientially with their thoughts and emotions in daily life situations. This could potentially underlie the observed result in Study 2 that the associations between mindful breathing and informal practice and outcomes became stronger from the 6-month to 12-month follow-up time-points, potentially due to continued informal mindfulness practice and emotional engagement. The relationships at 12-months remained stronger even when re-running the analyses at the 6-month follow-up with just those 19 individuals included in the original 12-month follow-up analyses. Future studies should help clarify the potential relationship between post-intervention mindfulness practices and processes of experiential engagement.

Interestingly, our findings differ from one study that did look at the contribution of informal practice to psychological outcomes. Carmody and Baer (2008) found that weekly informal practice during an 8-week MBSR program did not correlate with pre-post changes in any psychological symptoms, while amount of formal practice did. This study differed in that the sample was comprised of individuals with a range of psychological and physical difficulties compared to the samples in this study, which consisted of individuals with a principal diagnosis of GAD. Additionally, the ABBT in this study places less direct focus on formal practice, and more emphasis on informal practice and flexibility of mindfulness practice, and is an individual treatment compared to MBSR's group format. Future research should clarify this discrepancy in findings as well as the potential importance of informal mindfulness in longer-term outcomes.

There are several methodological limitations with the current study. The sample is small and racially homogeneous, increasing the risk of making Type II errors and precluding generalizations to more diverse populations, respectively. Importantly, these findings are correlational, and studies are needed to determine whether increased mindfulness practice leads to longer-term symptom improvements or whether such improvements lead to increased mindfulness practice, or if some other variable affects or underlies these relationships. Additionally, this study quantified mindfulness practices in terms of the estimated frequency of weekly practices using single-item scales with limited response options. This method does not allow for a precise measure of frequency nor does it take into account the duration or length of time engaged in mindfulness practices, thus precluding valid and detailed analysis of the impacts of "dosage effects" of the different mindfulness practices on long-term outcomes. Also, two of the questions had a range of answers from 1–5, from "never" to "many times a day", while the other ranged from 1–3, with "three times a week or more" as the highest rating, thereby potentially underreporting the frequency of practice for formal practice, which may have affected our ability to detect effects of formal practice. And while the consistency of findings across the two samples supports the potential validity of these brief measures, definitive conclusions cannot be made since no prior comparison or validation with more stringent and detailed practice measures have been

made. These limitations notwithstanding, the brevity of this measure may increase its clinical utility by placing less measurement burden on clients, participants, researchers, and clinicians.

Another potentially important aspect not looked at in this study is the “quality” of mindfulness practice, since clients who use mindfulness practice as a form of experiential avoidance would not be expected to improve even though they might report large practice amounts. Finally, the current studies followed participants to 9 and 12 months post-treatment, and longer follow-up periods are necessary to determine if mindfulness practices continue to be used and to be associated with outcome variables further following treatment termination.

Longitudinal studies with multiple assessment points over longer periods of time could help clarify the directionality of the relationship between mindfulness practice and outcome variables. Future studies also need to focus on the applicability of mindfulness interventions and post-treatment practices to diverse and underserved communities and different ecologically-relevant therapeutic settings.

These limitations aside, the results of the current study show medium to large correlations between practice and outcomes in the expected directions and support the potential utility of mindfulness practice, particularly informal practices and mindful breathing, as beneficial for longer-term improvements following treatment for GAD.

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### Highlights

- Two studies of an acceptance-based behavior therapy for GAD are analyzed.
- Three mindfulness practices are compared in relation to follow-up outcomes.
- Follow-up outcomes include worry, quality of life, and anxiety severity.
- Informal practice was related to follow-up outcomes in Study 1 and Study 2.
- Formal practice was unrelated to follow-up outcomes in both studies.

**Table 1**

Means (Standard Deviations) of Study Variables at Pre-treatment and 9-month Measurement Time Points for Study 1

	<b>Pre</b>	<b>9-Month</b>
<b>PSWQ</b>	67.04 (6.74)	48.07 (10.17)
<b>CSR</b>	5.61 (0.69)	3.00 (1.32)
<b>QOLI</b>	0.17 (2.05)	1.81 (1.81)
<b>Mindfulness of Breath</b>	-	2.93 (1.22)
<b>Informal Practice</b>	-	3.33 (1.18)
<b>Formal Practice</b>	-	2.07 (0.70)

*Notes:* CSR = GAD Clinician Severity Ratings from the Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; QOLI = Quality of Life Inventory



**Table 2**

Spearman Correlations Between Mindfulness Practice and Residualized Change Scores for Outcome Measures at 9-months Post-Treatment in Study 1

	9-months Post Treatment		
	PSWQ	CSR	QOLI
<b>Mindful Breathing</b>	-.40	-.21	.32
<b>Informal Mindfulness Practice</b>	-.55*	-.59*	.55*
<b>Formal Mindfulness Practice</b>	-.03	-.44	-.07

*Notes:* CSR = GAD Clinician Severity Ratings from the Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; QOLI = Quality of Life Inventory;

\*  $p < .05$

**Table 3**

Means (Standard Deviations) of Study Variables at Pre-treatment, 6-month, and 12-month Measurement Time Points for Study 2

	<b>Pre</b>	<b>6-Month</b>	<b>12-Month</b>
<b>PSWQ</b>	68.77 (6.99)	50.83 (10.72)	54.36 (10.17)
<b>CSR</b>	5.52 (0.59)	2.88 (1.62)	2.65 (1.63)
<b>QOLI</b>	0.29 (2.06)	1.41 (1.80)	1.12 (2.41)
<b>Mindfulness of Breath</b>	-	2.92 (1.18)	2.84 (1.16)
<b>Informal Practice</b>	-	3.14 (1.29)	3.16 (1.17)
<b>Formal Practice</b>	-	1.72 (.69)	1.74 (1.17)

*Notes:* CSR = GAD Clinician Severity Ratings from the Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; QOLI = Quality of Life Inventory

**Table 4**  
Spearman Correlations Between Mindfulness Practice and Residualized Change Scores for Outcome Measures at 6-months and 12-months Post-Treatment in Study 2

	6-months Post Treatment		12-months Post Treatment			
	PSWQ	CSR	QOLI	PSWQ	CSR	QOLI
<b>Mindful Breathing</b>	-.21	-.05	.25	-.45	-.38	.65**
<b>Informal Mindfulness Practice</b>	-.46*	-.55**	.36	-.49*	-.43	.55*
<b>Formal Mindfulness Practice</b>	-.25	-.29	.12	-.25	-.21	.37

Notes: CSR = GAD Clinician Severity Ratings from the Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; QOLI = Quality of Life Inventory;

\*  $p < .05$ ;

\*\*  $p < .01$

**Table 5**

Spearman Correlations Between Mindfulness Practice and Residualized Change Scores for Outcome Measures (Combining data from Sample 1 at 9-months and Sample 2 at 12-months Follow-Up)

	9–12 months Post Treatment		
	PSWQ	CSR	QOLI
<b>Mindful Breathing</b>	-.42*	-.32	.52**
<b>Informal Mindfulness Practice</b>	-.49**	-.51**	.57***
<b>Formal Mindfulness Practice</b>	-.11	-.29	.19

Notes: CSR = GAD Clinician Severity Ratings from the Anxiety Disorders Interview Schedule; PSWQ = Penn State Worry Questionnaire; QOLI = Quality of Life Inventory;

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$