Planning to Practice: Action and Coping Plans Increase Days of Meditation Practiced

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ABSTRACT. Despite the growing prevalence of mindfulness, few studies have investigated self-regulatory strategies to develop and sustain a meditation practice over the long-term. In the current research, participants (N = 109) naïve to mindfulness and meditation were randomly assigned to an active control or self-regulatory intervention designed to increase the frequency of meditation practice and habit strength over a 4-week practice period. The intervention led to more days of meditation practiced (z = 2.44, p = .02), but did not produce stronger habits of practice (z = 0.63, p = .53). Common perceived barriers to daily practice included busyness, forgetfulness, and lack of motivation. Common enabling factors to daily practice included setting practice reminders and identifying a suitable practice location. Implications, limitations, and future directions are discussed.



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Keywords: mindfulness, meditation, action plans, coping plans, habit strength

mpirical investigation into the effects of mindfulness meditation over the past three decades has demonstrated a range of psychological and physiological benefits, spurring unprecedented global interest in the practice. Growing interest in meditation has been accompanied by a multitude of books, online courses, and mobile applications that have made high-quality meditation instruction more accessible than ever before (Mrazek et al., 2018). Accordingly, national statistics document a more than threefold increase in meditation practice from 2012 to 2017, with approximately 35 million U.S. adults estimated to have practiced meditation in 2017 alone (Clarke, Barnes, Black, Stussman, & Nahin, 2018). Despite the increasing prevalence of meditation practice among the general public, little is known about how to help novice meditation practitioners maintain a longterm practice. Evidence has suggested that greater total time spent practicing meditation is associated with improved mindfulness and psychological wellbeing among practitioners (Carmody & Baer, 2008;

Huppert & Johnson, 2010; Vettese, Toneatto, Stea, Nguyen, & Wang, 2009). At the same time, greater single-session practice time is associated with reductions in practice adherence over time (Adams et al., 2018), and mindfulness-based intervention participants often struggle to achieve compliance with practice recommendations (Quach, Gibler, & Jastrowski Mano, 2017; Rosenzweig et al., 2010). Consequently, evaluating behavioral strategies that may help to sustain a meditation practice over the long-term is essential if meditation practitioners are to fully benefit from their practice.

A prominent behavioral strategy employed to sustain behavior over the long-term is *habit formation* (Duhigg, 2012; Galla & Duckworth, 2015; Gardner, 2015). Indeed, research has shown habits help individuals maintain greater behavioral consistency across a number of domains, including exercise, diet, sleep, schoolwork, and meditation (Galla & Duckworth, 2015; Lally, Chipperfield, & Wardle, 2008). Habits strengthen over time when a behavior is repeated within a specific context, leading to the automatic initiation of that behavior when the

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associated context is encountered (Gardner, 2015). By shifting the responsibility for the initiation of the behavior to an automatic process, habits reduce reliance on momentary self-control (Gardner, Lally, & Wardle, 2012). Thus, forming a habit of meditation may help practitioners avoid self-regulatory failures, accomplish their practice goals, and continue to meditate over the long term.

Crucial to successful habit formation are the characteristics of the context in which the behavior is enacted. If contextual factors make the behavior's initiation more difficult, habit formation will falter. Conversely, contexts that remove friction and facilitate action can enhance behavioral automaticity and habit acquisition. Given the importance of context, planning when and where to carry out a behavior is critical to the intentional development of habitual behavior. Such plans are referred to in the psychological literature as action *plans* and have been shown to translate behavioral intentions into actual behavior (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006; Hagger & Luszczynska, 2014). Action plans create a mental link between the relevant context and an individual's intent to act, facilitating behavior initiation when that context is encountered (Parks-Stamm, Gollwitzer, & Oettingen, 2007).

However, well-thought-out action plans may still fail to elicit the desired behavior. Internal barriers to action, such as fatigue, doubt, or low mood, along with external barriers, such as social pressure, time constraints, or an unsuitable environment, can prevent intention from turning into action. Coping plans, which involve planning a response to anticipated barriers, can be used to circumvent these obstacles to action (Kwasnicka, Presseau, White, & Sniehotta, 2013). Like action plans, coping plans mentally link anticipated barriers to a planned response. Encountering a barrier activates the coping response and allows the individual to persist with the intended behavior (Sniehotta, Scholz, & Schwarzer, 2006). Taken together, action plans and coping plans may provide a complementary approach to bolstering long-term adherence to meditation practice.

Present Study

The paucity of research into behavioral strategies to facilitate long-term meditation practice underscores a critical gap in the literature on meditation instruction. To fill this gap, the present research evaluated the impact of two complementary evidencebased self-regulation strategies on adherence to mindfulness meditation practice. Specifically, the current investigation assessed the impact of the action and coping plans on number of days of meditation practiced and habit strength over four weeks. We predicted that subjects assigned to create action and coping plans would practice meditation more often over a four-week daily practice period and score higher on a measure of habit strength compared to subjects assigned to an active control.

Method

Participants and Design

The sample consisted of 109 undergraduate students at a large public university in the southwestern United States. Participants were recruited on a rolling basis over 5 weeks from an introductory level psychology class that required participation in research to receive course credit. Participants were eligible if they reported no prior experience with mindfulness or meditation practice. Participants were randomly assigned to either an action and coping plan intervention or active control condition. Informed consent was obtained from all participants in the study.

Procedure

Prior to initiating the study, approval was granted from the University of California Santa Barbara institutional review board to conduct this research.

In-lab Time 1. At Time 1 (T1), participants were brought into an experimenter room where they watched a 30-minute digital mindfulness crash course designed by our lab (see online supplementary materials at https://osf.io/aj6te). At the end of the crash course, participants practiced a brief mindful breathing meditation and received instructions to practice mindful breathing meditation for 5 minutes each day over the next 4 weeks. Participants then received the first part of the self-regulatory intervention or active control (described below). All participants were provided a daily tracking sheet on which they were instructed to track their meditation practice starting the following day.

Practice period. Over the 4 weeks following T1, participants recorded whether or not they had practiced meditation each day on the provided tracking sheet. One week into the 4-week practice period, all participants additionally received an online survey sent via email. The survey contained the second part of the intervention or active control (described below). Two days before each participant's posttest session, participants were sent an email reminder to return to posttesting.

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In-lab Session 2. Four weeks after T1, participants returned to the lab for posttesting (T2). An online questionnaire was administered to assess habit strength. Additionally, participants were provided with two open-ended prompts that asked them to describe which factors had helped and which factors had hindered them in maintaining a daily practice.

Treatment condition.

Part 1. Participants assigned to the treatment condition completed an action plan at T1. First, the instruction to practice mindful breathing meditation daily over the next 4 weeks was reiterated. Second, participants were guided through the creation of their action plan. Participants were first instructed to consult their class schedule and personal calendars in order to determine the best time and place for them to practice meditation on each day of the week. For each day of the week, participants were asked to stick to the time and place they had selected across all 4 weeks. When choosing a time and place for each day of the week, participants were presented with a list of four criteria designed to help them select a practice time and location. Specifically, participants were told: "Your mindful breathing exercise should occur (a) during a natural transition in your day, (b) when you have enough time, (c) near a place you feel comfortable practicing, and (d) where there won't be a lot of distractions." Participants were then provided with a worksheet containing a daily calendar that ranged from 6 a.m. to midnight for each day of the week (see online Supplementary Materials). At the appropriate time on the calendar, participants wrote down the location they intended to practice for each day of the week. Participants also wrote down the activity that they expected to directly precede their planned meditation time for each day of the week.

Next, participants created an "enjoyment strategy" that they would use to reward themselves after practicing meditation. Two suggestions were provided ("Before doing mindful breathing, remind yourself this is a chance to set down your burdens and find peace of mind" and "When you finish mindful breathing, take a moment to give yourself a little credit for doing something good for yourself"), but participants were also encouraged to develop their own enjoyment strategies if they so desired. Participants wrote down their chosen enjoyment strategy on the provided worksheet. The reverse side of the worksheet contained the 4-week daily tracking sheet, on which participants were asked to indicate if they had or had not practiced meditation (see online Supplementary Materials).

Part 2. One week into the 4-week daily practice period, participants received a survey that helped them revise their action plan and enjoyment strategy and create a coping plan (referred to as an "obstacle strategy"). First, participants were asked to revise their action plan if they had not practiced mindful breathing on each day so far. Second, participants were instructed to think about the most common barrier to daily practice that they had encountered and to form a coping plan to overcome this obstacle. Third, participants were encouraged to revise their enjoyment strategy if they felt they could make it more effective.

Active control.

Part 1. Participants assigned to receive the active control were asked to respond to four questions requesting feedback on the digital mindfulness crash course. Participants were asked how enjoyable, relevant, and valuable they had found the course on a 1-7 scale. Participants were then asked to provide recommendations to improve the course. As in the treatment condition, participants were instructed to practice 5 minutes of mindful breathing meditation each day over the next 4 weeks and to track their practice on a provided worksheet (see online supplementary materials). Participants were then told that getting comfortable with practicing an activity is one of the best ways to bring it into your daily routine, and subsequently practiced an additional 5-minute mindful breathing meditation.

Part 2. The control condition also received a survey 1 week into the 4-week practice period. The control survey consisted of three steps. First, participants were asked to review their daily tracking sheet. Second, participants were asked to list five of their existing habits. Third, participants were asked to pick one of the five habits they had listed that had been most beneficial to their life and explain how it has benefited their life.

Measurement.

Habit strength. The 12-item Self-Report Habit Index (Verplanken & Orbell, 2003) was used to measure habit strength (e.g., "Practicing mindful breathing is something I do frequently"; "Practicing mindful breathing is something I do without having to consciously remember"; "Practicing mindful breathing is something that's typically 'me'"). The index is widely used to measure habit strength of an identified behavior. Items were rated from 1 (*disagree*) to 6 (*agree*). Internal reliability was high ($\alpha = .95$).

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Days of meditation practice. Days of meditation practiced was recorded by participants on a daily practice tracking sheet. Number of unique days meditated from 1 day after T1 until the day before T2 was aggregated to create a total score from 0 to 27.

Enablers and barriers to practice. Enablers and barriers to daily practice were assessed by openended responses to two prompts ("Over the last 4 weeks, what factors did you find helpful when trying to maintain your daily mindful breathing practice? Try to think of at least two."; "Over the last 4 weeks, what types of challenges did you face when trying to maintain your daily mindful breathing practice? Try to think of at least two.").

Analytic plan. Only participants who returned to posttesting were included in the analyses. In the treatment condition, 39 returned to posttesting, while 40 returned in the control condition. All participants who returned to posttesting were analyzed to assess the effect of condition on habit strength. Due to nonnormal distribution of data, a Mann-Whitney Utest was run to test the effect of condition on habit strength. Of the 79 participants who returned to nontesting, 69 participants (treatment n = 34; control n = 35) also returned their daily tracking sheet containing data on days of meditation practice. A chi-square test of homogeneity revealed no differences between conditions in proportions of nonreturners or returners who did not bring tracking sheet (p = .97). Participants who did not provide tracking sheet data were not included in the analysis assessing effect of condition on meditation practice. Again, due to nonnormal distribution of data, a Mann-Whitney Utest was run to test the effect of condition on days of meditation practice.

Results

Descriptive Statistics

Days of meditation practice. On average, participants practiced meditation less than half the total number of days in the practice period (M = 12.06, SD = 7.52). Participants who received the self-regulatory intervention practiced more (M = 14.38, SD = 8.10) than participants who received the active control (M = 9.80, SD = 6.23).

Habit strength. On average, participants reported low levels of habit strength (M = 2.22, SD = 1.07). Participants who received the self-regulatory intervention reported similar habit strength (M = 2.28, SD = 1.07) to participants who received the active control (M = 2.15, SD = 1.07).

Correlation between days of practice and habit strength. A moderate-to-large correlation was observed between days of meditation practice and habit strength (r = .49, p < .01). This correlation held in both the treatment condition (r = .57, p < .01) and control condition (r = .43, p = .01).

Main Analyses

The intervention increased days of meditation practice. A Mann-Whitney U test was performed to determine the effect of condition on days of meditation practice. Days of meditation practice was significantly greater in the treatment condition (mean rank = 40.97) than control condition (mean rank = 29.20), U= 798.00, z = 2.44, p = .02.

The intervention did not change habit strength. A Mann-Whitney *U* test was performed to determine the effect of condition on habit strength. Habit strength did not significantly differ between the treatment condition (mean rank = 41.65) and control condition (mean rank = 38.39), U= 844.50, z = 0.63, p = .53.

Enablers and barriers to practice. Of the 79 participants who returned to posttesting, 72 provided a written response to items assessing enablers and barriers to daily practice. After responses were coded by the authors, five major themes that enabled participants to practice daily were identified: 31.9% (*n* = 23) set practice reminders, 26.4% (n = 19) practiced in a quiet and comfortable location, 18.1% (*n* = 13) practiced in the morning or evening, 16.7% (n = 12) recalled the benefits of the practice, and 8.3% (n = 6) practiced at the same time and same place each day. Five major themes related to common barriers to daily practice were also identified: 72.2% (n = 52) reported being too busy to practice, 62.5% (n = 45) reported forgetting to practice, 41.7% (*n* = 30) reported motivational barriers to practicing, 16.7% (n = 12) reported difficulties identifying a comfortable and quiet practice location, and 12.5% (*n* = 9) reported difficulties creating a practice schedule.

Discussion

The present study found that a self-regulatory intervention increased the days of meditation practiced over a 4-week daily practice period among individuals who had no prior experience with mindfulness or meditation. However, the effect of the intervention did not extend to increased habit strength. There are a number of reasons why the lack of effect on habit strength might have been

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observed. For one, lack of context consistency across the practice period might have limited the development of habit strength. Although participants were encouraged to practice meditation at the same time and place on a specific day across the practice period (e.g., same time and place every Monday), the intervention did not require participants to practice meditation in the same location or at the same time across each day of the week. Instead, participants were encouraged to consult their weekly schedule when planning their meditations in order to account for the variability in the typical undergraduate student's schedule. Although this allowed for increased customization and personalization of practice time and location on different days of the week, this approach likely created considerable variability in practice context across days. The lack of context consistency across days might have hindered the acquisition of context-behavior associations that underlie habit strength. Second, although research has suggested that missing a single day of a target behavior does not have a detrimental impact on habit formation (Lally, van Jaarsveld, Potts, & Wardle, 2009), missing many days in a row may hinder habit development (Armitage, 2005). Given that separate action plans were created for each day of the week, some action plans might have worked better than others, potentially contributing to lapses in practice over time. Although the practice period lasted 27 days, participants receiving the intervention meditated an average of just over 14 days, indicating that missed days of practice were common. Third, factors intrinsic to the practice of meditation may have restricted habit strength from developing. Research has suggested that complex behaviors may not become as automatic, and therefore may have lower habit strength maximums compared with simple tasks (Verplanken, 2006; Wood, Quinn, & Kashy, 2002). Although ostensibly simple, the initiation of a meditation practice session can involve a series of cognitive, affective, and behavioral processes that cumulatively serve to increase behavioral complexity. For example, beginning a meditation practice session might involve evaluating whether one has sufficient time, overcoming motivational barriers, and locating a quiet and private place to practice. For this reason, meditation can be seen as a more complex behavior and, as a result, may have a lower maximum of habit strength, further confining differences between conditions. Indeed, research has shown that habit formation can take between 18 and 254 days depending on the complexity of the behavior and the consistency with which it is performed (Lally, van Jaarsveld, Potts, & Wardle, 2009). The action plan, coping plan, and enjoyment strategies crafted by participants in the intervention were designed to bolster behavioral frequency and increase habit strength by encouraging daily practice while accounting for the variability of a student's changing daily schedule. However, lack of context consistency, variability in daily practice, and the complexity of initiating a meditation session may all have hampered the development of habit strength.

Although differences were not observed between conditions on measures of habit strength, the intervention did lead to more days of meditation practice for participants in the treatment condition. It is especially promising that these results were observed among a population that lacked prior experience with mindfulness or meditation. Many mindfulness-based training programs include participants who are motivated and autonomously driven to practice meditation, indicating that this intervention may work just as well, if not better, in these contexts. Indeed, research has suggested that action plans work best when supported by high levels of commitment (Gollwitzer, 1999; Sheeran, Webb, & Gollwitzer, 2005). Among the present sample, days of practice accounted for more than 20% of the variance in habit strength, suggesting that interventions resulting in increased practice could lead to stronger habits. This finding points to the potential for action and coping plan interventions to lay the framework for long-term meditation practice. However, additional support may be necessary to bolster daily practice and context consistency. For example, encouraging context consistency across days of the week, or administering weekly check-ins that facilitate plan revision and barrier identification may help practitioners achieve greater context consistency, optimize action plans, and overcome new barriers as they arise. Although the treatment condition received a check-in one week into the practice period, they did not continue to receive check-ins throughout the rest of the practice period.

This study also assessed the factors that participants reported to have helped or hindered daily practice. A substantial percentage of the sample reported being too busy to practice 5 minutes of meditation per day. However, 5 minutes represents an inconsequential amount of time in the day. Although a majority of the participants reported being too busy, it is more likely that most simply felt

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too busy. This distinction is important. If participants were truly too busy, then future interventions may need to focus on helping practitioners reduce commitments in order to incorporate meditation practice into their day. However, given the more likely scenario that the participants felt too busy, busyness can be conceptualized as a motivational barrier. Future research might aim to develop strategies that increase practitioners' motivation over time, for example, by delivering targeted motivational messages directly before a scheduled practice time. A substantial percentage of participants also reported forgetting to practice, as well as other motivational barriers such as fatigue, not seeing value in the practice, or simply not wanting to practice. On the other hand, the most common enabling factor participants reported was setting reminders. Reminders are powerful, not only because they can make one's plan to meditate more salient, but also because they can simultaneously address common motivational barriers. For example, a reminder set 5 minutes before a planned meditation time could both serve as a reminder to practice and a motivational boost by highlighting the benefits of the practice. Precise and personalized motivational reminders delivered with digital tools are a promising future direction for addressing common barriers to daily meditation practice.

Limitations and Future Directions

The study was subject to a number of limitations. First, the multifaceted nature of the intervention makes it difficult to isolate the elements that contributed most to increased days of practice. Future work could manipulate the presence of action plans, coping plans, and enjoyment strategies independently to precisely identify the contribution of each. Second, the analysis did not look at whether practice trends changed over time. Evaluating whether specific points in time are particularly challenging for most people to stay adherent could allow for the targeted administration of coping plan interventions. Third, the study duration was restricted to a 4-week period, limiting the study's ability to assess whether habit strength would have continued to develop over a longer period of time. The 4-week duration was necessary in order to incorporate sufficient time for recruiting an adequate number of participants given the constraints of the university's 11-week quarter system. Given that recruitment was estimated to take 5 weeks and began on the second week of the quarter, a practice period of 4 weeks was necessary. No longterm follow up was conducted, rendering us further

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PSI CHI JOURNAL OF PSYCHOLOGICAL RESEARCH unable to draw conclusions about whether habit formation would have been achieved. These limitations suggest caution in extrapolating the findings of this study to habit formation. Future studies may benefit from expanding the practice period duration and conducting long-term follow-ups, as well as assessing the duration and consistency necessary to accomplish habit formation of mindfulness meditation. Fourth, the study was unable to examine practice data for participants who did not return to posttesting. Participants who were more engaged with their daily practice might have been more likely to return to posttesting, leading to potentially inflated effects. Future research may consider using digital methods of behavior tracking as to eliminate the need for participants to return to the lab to collect measures of behavior frequency. Fifth, the study only examined participants who had no prior experience with mindfulness or meditation, limiting the generalizability of this sample to those who are just beginning their mindfulness practice. Future research could look at the effects of action and coping plans on participants who have prior experience with meditation practice. Sixth, the study relied upon data from participant self-report. Non-self-report measures are needed to most accurately measure the effect of self-regulation interventions on meditation practice. Seventh, participants were asked to record their daily practice on a piece of paper we referred to as the daily tracking sheet. It is unlikely that participants would have carried their tracking sheet with them throughout the 4-week practice period, presenting barriers to immediate and accurate self-reporting. Instead, participants may have relied on memory recall to report their meditation practice, increasing the likelihood of error. Future studies may benefit from using digital tracking methods that can utilize reminders to increase the accuracy of self-report behavioral measures. Eighth, participant attrition at posttesting reduced the achieved power of the study, suggesting caution in interpreting the results. Replications with a larger sample size are necessary before results can be considered conclusive. Last, demographic information on participants was not analyzed, limiting interpretations of the generalizability of the results, as well as examinations of variance in results among age, sex, and race/ethnicity, and other demographic variables. Although demographic data was collected by the department managing the participant pool, errors in communication resulted in the deletion of the demographic data before it could be shared with the authors of this study.

Concluding Comments

Mindfulness meditation holds enormous potential to transform lives. Still, no amount of transformation can occur without facing the reality of practice. As a whole, this study highlights the promises of using action plans and coping plans to help naïve mindfulness practitioners develop a long-term meditation practice. The self-regulatory intervention assessed here increased the overall frequency of days of meditation practiced. However, the intervention was unable to increase habit strength over a 4-week period, demonstrating the persistent challenge of facilitating a long-term practice. As mindfulness continues to expand into educational, occupational, and therapeutic contexts, developing self-regulatory strategies that facilitate a sustainable practice remains more important than ever.

References

- Adams, Z. W., Sieverdes, J. C., Brunner-Jackson, B., Mueller, M., Chandler, J., Diaz, V., . . . Treiber, F. A. (2018). Meditation smartphone application effects on prehypertensive adults' blood pressure: Dose-response feasibility trial. *Health Psychology*, 37, 850–860. https://dx.doi.org/10.1037/hea0000584
- Armitage, C. J. (2005). Can the theory of planned behavior predict the maintenance of physical activity? *Health Psychology*, 24, 235–245. https://doi.org/10.1037/0278-6133.24.3.235

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, 31, 23–33. https://doi.org/10.1007/s10865-007-9130-7

Clarke, T. C., Barnes, P. M., Black, L. I., Stussman, B. J., & Nahin, R. L. (2018). Use of yoga, meditation, and chiropractors among U.S. adults aged 18 and over. (NCHS data brief, No. 325). Hyattsville, MD: National Center for Health Statistics.

Duhigg, C. (2012). The power of habits: Why we do what do in life and business. New York, NY: Random House.

Galla, B. M., & Duckworth, A. L. (2015). More than resisting temptation: Beneficial habits mediate the relationship between self-control and positive life outcomes. *Journal of Personality and Social Psychology*, 109, 508–525. https://dx.doi.org/10.1037/pspp0000026

Gardner, B. (2015). A review and analysis of the use of 'habit' in understanding, predicting, and influencing, health-related behaviour. *Health Psychology Review*, 9, 277–295. https://doi.org/10.1080/17437199.2013.876238

Gardner, B., Lally, P., & Wardle, J. (2012). Making health habitual: The psychology of 'habit formation' and general practice. *British Journal of General Practice*, 62, 664–666. https://doi.org/10.3399/bjgp12X659466

Gollwitzer, P. (1999). Implementation intentions: Strong effects of simple plans. American Psychologist, 54, 493–503. https://doi.org/10.1037/0003-066X.54.7493

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. Advances in Experimental Social Psychology, 38, 69–119. https://doi.org/10.1016/S0065-2601(06)38002-1

Hagger, M. S., & Luszczynska, A. (2014). Implementation intention and action planning interventions in health contexts: State of the research and proposals for the way forward. *Applied Psychology: Health and Well-Being*, 6, 1–47. https://doi.org/10.1111/aphw.12017

Huppert, F. A., & Johnson, D. M. (2010). A controlled trial of mindfulness training in schools: The importance of practice for an impact on well-being. *The Journal of Positive Psychology*, 5, 264–274. https://doi.org/10.1080/17439761003794148

Kwasnicka, D., Presseau, J., White, M., & Sniehotta, F. F. (2013). Does planning

how to cope with anticipated barriers facilitate health-related behaviour change? A systematic review. *Health Psychology Review*, 7, 129–145. https://doi.org/10.1080/17437199.2013.766832

- Lally, P., Chipperfield, A., & Wardle, J. (2008). Healthy habits: Efficacy of simple advice on weight control based on a habit-formation model. *International Journal of Obesity*, 32, 700–707. https://doi.org/10.1038/sj.ijo.0803771
- Lally, P., van Jaarsveld, C. H. M., Potts, H. M. M., & Wardle, J. (2009). How are habits formed: Modeling habit formation in the real world. *European Journal of Social Psychology*, 40, 998–1009. https://doi.org/10.1002/ejsp.674

Mrazek, A. J., Mrazek, M. D, Cherolini, C. M, Cloughesy, J. N., Cynman, D. J., Gougis, L. J., ... Schooler, J. W. (2018). The future of mindfulness training is digital, and the future is now. *Current Opinion in Psychology*, 28, 81–86. https://doi.org/10.1016/j.copsyc.2018.11.012

Parks–Stamm, E. J., Gollwitzer, P. M., & Oettingen, G. (2007). Action control by implementation intentions: Effective cue detection and efficient response initiation. Social Cognition, 25, 248–266. https://doi.org/10.1521/soco.2007.25.2.248

Quach, D., Gibler, R. C., & Jastrowski Mano, K. E. (2017). Does home practice compliance make a difference in the effectiveness of mindfulness interventions for adolescents? *Mindfulness*, 8, 495–504. https://doi.org/10.1007/s12671-016-0624-7

Rosenzweig, S., Greeson, J. M., Reibel, D. K., Green, J. S., Jasser, S. A., & Beasley, D. (2010). Mindfulness-based stress reduction for chronic pain conditions: Variation in treatment outcomes and role of home meditation practice. *Journal of Psychosomatic Research*, 68, 29–36. https://doi.org/10.1016/j.jpsychores.2009.03.010

Sheeran, P., Webb, T. L., & Gollwitzer, P. M. (2005). The interplay between goal intentions and implementation intentions. *Personality and Social Psychology Bulletin*, 31, 87–98. https://doi.org/10.1177/0146167204271308

Sniehotta, F. F., Scholz, U., & Schwarzer, R. (2006). Action plans and coping plans for physical exercise: A longitudinal intervention study in cardiac rehabilitation. *British Journal of Health Psychology*, *11*, 23–37. https://doi.org/10.1348/135910705X43804

Verplanken, B. (2006). Beyond frequency: Habit as a mental construct. British Journal of Social Psychology, 45, 639–656.

https://doi.org/10.1348/014466605X49122
Verplanken, B., & Orbell, S. (2006). Reflection on past behavior: A self-report index of habit strength. *Journal of Applied Social Psychology*, 33, 1313–1330. https://doi.org/10.1111/j.1559-1816.2003.tb01951.x

Vettese, L. C., Toneatto, T., Stea, J. N. Nguyen, L., & Wang, J. J. (2009). Do mindfulness meditation participants do their homework? And does it make a difference? A review of the empirical evidence. *Journal of Cognitive Psychotherapy*, 23, 198–225. http://dx.doi.org/10.1891/0889-8391.23.3.198

Wood, W., Quinn, J. M., & Kashy, D. A. (2002). Habits in everyday life: Thought, emotion, and action. *Journal of Personality and Social Psychology*, 83, 1281–1297. https://doi.org/10.1037/0022-3514.83.6.1281

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