

Buddhist-Inspired Meditation Increases the Value of Calm

Birgit Koopmann-Holm
Stanford University

Jocelyn Sze
University of California Berkeley

Camaron Ochs and Jeanne L. Tsai
Stanford University

Most studies of meditation have focused on “actual affect” (how people actually feel). We predict that meditation may even more significantly alter “ideal affect” (how people ideally want to feel). As predicted, meditators ideally wanted to feel calm more and excited less than nonmeditators, but the groups did not differ in their actual experience of calm or excited states (Study 1). We ruled out self-selection and nonspecific effects by randomly assigning participants to meditation classes, an improvisational theater class, or a no class control (Study 2). After eight weeks, meditators valued calm more but did not differ in their actual experience of calm compared with the other groups. There were no differences in ideal or actual excitement, suggesting that meditation selectively increases the value placed on calm. These findings were not due to expectancy effects (Study 3). We discuss the implications of these findings for understanding how meditation alters affective life.

Keywords: emotion, meditation, affect, ideal, calm

In the last decade, there has been a rapid resurgence of scientific interest in the effects of meditation on various aspects of psychological functioning (e.g., Britton, Haynes, Fridel, & Bootzin, 2010; Carmody & Baer, 2008; Davidson et al., 2003; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Hutcherson, Seppala, & Gross, 2008; Kabat-Zinn, 2003; Leiber, Klimecki, & Singer, 2011; Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008; Lutz, Dunne, & Davidson, 2007; Pace et al., 2009; Shapiro, Schwartz, & Bonner, 1998; Smith, Compton, & West, 1995). Much of this research examines the effects of Buddhist-inspired meditation (e.g., mindfulness, compassion meditation) on how people feel. Despite the wide use of meditation in various health and educational settings (e.g., Baer, 2003), the empirical findings regarding the effects of meditation on affective experience are surprisingly mixed. For example, whereas some studies find that meditation decreases how

negative people feel (e.g., Davidson et al., 2003; Hutcherson et al., 2008) and/or increases how positive people feel (e.g., Fredrickson et al., 2008; Smith et al., 1995), others find that meditation has no effect on people’s negative (e.g., Fredrickson et al., 2008; Thompson & Waltz, 2007, Study 2) or positive affect (e.g., Chambers, Lo, & Allen, 2008; Davidson et al., 2003).

One limitation of this work is its focus on “actual affect” (how people actually feel). Although actual affect is clearly an important part of emotional life, recent research suggests that “ideal affect” (how people ideally want to feel) is equally, and in some cases, even more important (Tsai, 2007). Whereas actual affect is a response to an event, ideal affect is a value, goal, and state that people desire and work to attain. Whereas actual affect tells people how they are doing at a particular moment or period of time (“How do I feel?”), ideal affect helps people evaluate their feelings and places them in context (“Is this a good or bad feeling?” “Is this how I want to feel?”). Ideal affect also guides and motivates behavior (e.g., getting a massage to feel calm). Here we argue that broadening studies of meditation and emotion to include ideal affect will advance our understanding of how meditation alters affective life, and perhaps help reconcile the mixed nature of existing findings.

Meditation and Ideal Affect

In Affect Valuation Theory (AVT), we predict that engagement in practices like meditation alters people’s ideal affect because such practices reflect and reinforce specific cultural values, ideals, and standards (Tsai, 2007). For example, in describing how to meditate, Buddhist teacher *Sogyal Rinpoche* (2002) articulates the meditative ideal:

The whole of meditation practice can be essentialized into these three crucial points: bring your mind home, and release, and relax. [. . .] To *bring your mind home* means to bring the mind into the state of Calm

This article was published Online First January 28, 2013.

Birgit Koopmann-Holm, Department of Psychology, Stanford University; Jocelyn Sze, Department of Psychology, University of California Berkeley; Camaron Ochs and Jeanne L. Tsai, Department of Psychology, Stanford University.

This research was funded by the Institute of Unlimited Love, the Stanford Center for Compassion and Altruism Research and Education, the National Institute of Mental Health (R01MH068879), and the Stanford Undergraduate Research Opportunities Program. We thank T. J. Langri and K. Lee for their assistance with the project; B. Stahl, D. Klein, D. Dennison, and J. Landaw for their participation in the studies; and H. Markus, E. Thomas, and the members of the Culture and Emotion Lab and Stanford Culture Collab for their comments on earlier versions of this article.

Correspondence concerning this article should be addressed to Birgit Koopmann-Holm or Jeanne L. Tsai, Department of Psychology, Jordan Hall, Building 420, Stanford University, Stanford, CA 94305-2130. E-mail: bkoopmann@stanford.edu or jeanne.tsai@stanford.edu

Abiding [. . .]. To *release* means to release the mind from its prison of grasping [. . .]. Finally, to *relax* means to be spacious and to relax the mind of its tensions (Rinpoche, 2002, p. 63).

Calm states facilitate attention to one's environment (e.g., Schupp, Cuthbert, Bradley, Birbaumer, & Lang, 1997) and therefore, may help individuals achieve another meditative ideal: to increase awareness and acceptance of one's emotions (e.g., Kabat-Zinn, 1990). When people learn how to meditate, they first learn what the meditative ideal is, and then how to achieve it. Each time they meditate, they are reminded of this ideal. With increasing practice, people may begin to apply the meditative ideal to their daily lives, which may change their global or overall ideal affect. For example, people may consciously or unconsciously try to experience more calm in their lives by engaging in calmer activities (Tsai, 2007) or choosing calmer consumer products (Tsai, Miao, Seppala, Fung, & Yeung, 2007, Study 4).

Realizing the calm meditative ideal, however, may be easier for some individuals than others because people vary by temperament, regulatory abilities, and control over their circumstances (e.g., Gross & John, 2003). Thus, consistent with AVT, we predict that on average, meditation will change ideal affect more than actual affect, especially among people who are learning to meditate for the first time. Specifically, based on descriptions of Buddhist-inspired meditation (e.g., Rinpoche, 1996) and previous findings that Buddhism values calm and other low arousal positive (LAP) states more and excitement and other high arousal positive (HAP) states less than Christianity (Tsai, Miao, & Seppala, 2007), we hypothesized that meditators would value calm and other LAP states *more* and excitement and other HAP states *less* than would nonmeditators.

What about negative states? In contrast to ideal HAP and ideal LAP, Buddhist-Christian differences in ideal high arousal negative states (HAN; e.g., fearful) and low arousal negative states (LAN; e.g., dull) are less clear (Tsai et al, 2007). If meditation promotes the acceptance of *all* emotions, then one might expect meditators to value HAN and LAN states more than nonmeditators. On the other hand, Tsai, Miao, and Seppala (2007) found that Buddhist practitioners devalued HAN more (or valued HAN *less*) than Christian practitioners and nonpractitioners, and did not differ from these groups in the degree to which they valued LAN. Therefore, we were agnostic as to whether differences in ideal negative affect would emerge. Similarly, based on the mixed nature of previous findings, we were agnostic as to whether differences in actual affect (LAP, HAP, HAN, or LAN) would emerge; however, we predicted that if significant differences in actual affect did emerge, they would be smaller in magnitude than differences in ideal affect.

We tested these hypotheses in two studies and conducted a third study to rule out expectancy effects. Because we were interested in the effects of meditation on overall affective functioning (rather than immediately after meditation), we administered global measures of ideal and actual affect (i.e., "over the course of a typical week . . ."). We controlled for actual affect when examining changes in ideal affect, and controlled for ideal affect when examining changes in actual affect to determine the independent effects of meditation on each type of affect.

Study 1: Affective Differences Between Meditators and Nonmeditators

Study 1 tested our hypotheses in a sample of self-identified meditators and nonmeditators.

Method

Participants. Forty-three university students who had been practicing Buddhist-inspired meditation for at least one year, and 48 students who did not practice any form of meditation were recruited for an online study. Meditators and nonmeditators were recruited separately so that neither group knew to whom they were being compared.

Meditators reported meditating for an average of 4.28 years ($SD = 2.92$), approximately 2–3 times a week ($M = 3.28$, $SD = 1.84$, on an 8-point scale, 1 = *more than once a day* to 8 = *never*), for about 31.16 minutes per session ($SD = 14.39$). There were no group differences in gender, % Female: Meditators = 51.16, Nonmeditators = 45.83, $\chi^2(1, 91) = .26$, *ns*. Meditators were significantly older (mean age = 24.98, $SD = 6.49$) than Nonmeditators (mean age = 20.90, $SD = 1.37$), $F(1, 89) = 18.12$, $p < .001$, partial eta squared = .17; therefore, we controlled for age in our analyses.

Instruments and procedure. Participants completed an abridged version of the Affect Valuation Index (AVI; Tsai & Knutson, 2006; Tsai, Knutson, & Fung, 2006), which asks participants to use a 5-point rating scale ranging from 1 (*never*) to 5 (*all the time*) to rate states that varied in terms of arousal (high, low) and valence (positive, negative) based on the affective circumplex (Feldman Barrett & Russell, 1999; Larsen & Diener, 1992; Watson & Tellegen, 1985). Participants rated how often over the course of a typical week they: (a) actually experienced each state (to assess actual affect) and (b) ideally wanted to feel each state (to assess ideal affect). "Calm" and "peaceful" were used to sample LAP states; "enthusiastic" and "euphoric" were used to sample HAP states; "dull" and "sleepy" to sample LAN states, and "hostile" and "worried" to sample HAN states. Cronbach's alphas were .85 and .82 for actual and ideal LAP, .74 and .66 for actual and ideal HAP, .63 and .24 for actual and ideal LAN, and .50 and .31 for actual and ideal HAN (alphas for negative states tend to be lower than those for positive states due to restricted variance).

All participants also completed a demographic questionnaire, and meditators completed an assessment of their meditation practice.

Study 1 Analyses and Results

We initially ran our analyses with Gender as a between subjects factor; however, because there were no significant Gender by Group interactions, we dropped Gender from our final analyses. As mentioned above, we controlled for actual affect when examining group differences in ideal affect, and we controlled for ideal affect when examining group differences in actual affect. The findings did not change when we did not include these covariates.

We conducted separate analyses of covariance (ANCOVAs) for actual and ideal LAP and HAP, controlling for age and the respective other type of affect. As predicted, the main effect of Group (Meditators, Nonmeditators) was significant for ideal LAP [$F(1,$

87) = 9.34, $p < .01$, partial eta squared = .10] and ideal HAP [$F(1, 87) = 4.94$, $p < .05$, partial eta squared = .05]; meditators valued LAP more and HAP less than did nonmeditators (see Figure 1).

The main effect of Group, however, was not significant for actual LAP [$F(1, 87) = 1.44$, *ns*] or actual HAP [$F(1, 87) = 1.23$, *ns*]; meditators and nonmeditators did not differ in how calm or excited they actually felt. The main effect of Group was also not significant for ideal LAN [Meditators: $M = 1.09$, $SE = .04$; Nonmeditators: $M = 1.11$, $SE = .03$; $F(1, 87) = .28$, *ns*], ideal HAN [Meditators: $M = 1.08$, $SE = .04$; Nonmeditators: $M = 1.10$, $SE = .03$; $F(1, 87) = .17$, *ns*], actual LAN [Meditators: $M = 1.98$, $SE = .11$; Nonmeditators: $M = 1.99$, $SE = .10$; $F(1, 87) = .00$, *ns*], or actual HAN [Meditators: $M = 1.84$, $SE = .11$; Nonmeditators: $M = 1.79$, $SE = .10$; $F(1, 87) = .13$, *ns*].

In summary, as predicted, meditators valued LAP more and HAP less than did nonmeditators. The groups, however, did not differ in their actual LAP or actual HAP or their ideal and actual negative states. Consistent with AVT, these findings suggest that meditation alters ideal affect more than actual affect, but only for positive states. Although the absence of differences in actual affect may seem surprising given how long the meditators reported meditating, and findings that meditation alters actual affect (e.g., Hutcherson et al., 2008), our results support other findings that do not find an effect of meditation on actual affect (e.g., Davidson et

al., 2003, for positive affect), as well as personal accounts that achieving the meditative ideal is a difficult and lifelong process (Ricard, 2010).

Study 2: Does Meditative Practice Alter Ideal Affect?

Because of Study 1's correlational design, we could not determine whether our findings were due specifically to meditation, self-selection (e.g., people who value LAP more and HAP less may be more likely to meditate), and/or nonspecific effects (e.g., interaction with a caring teacher). To address this issue, we conducted a second study in which participants were randomly assigned to either one of two meditation classes (mindfulness or compassion) or to one of two control groups (improvisational theater or no class). We included mindfulness and compassion meditation because both have been used to improve affective experience (Carmody & Baer, 2008; Hofmann, Grossman, & Hinton, 2011). We compared meditation to an active control group (an improvisational theater class) because most studies of meditation and emotion either use waitlist controls as the comparison group or use pre-post designs, making it difficult to distinguish between the specific and nonspecific effects of meditation. We chose an *improvisational theater class* as the active control because like the meditation courses it: (a) met for two hours/week for 8 weeks; (b) was instructor-led and taught in a group; (c) taught skills related to

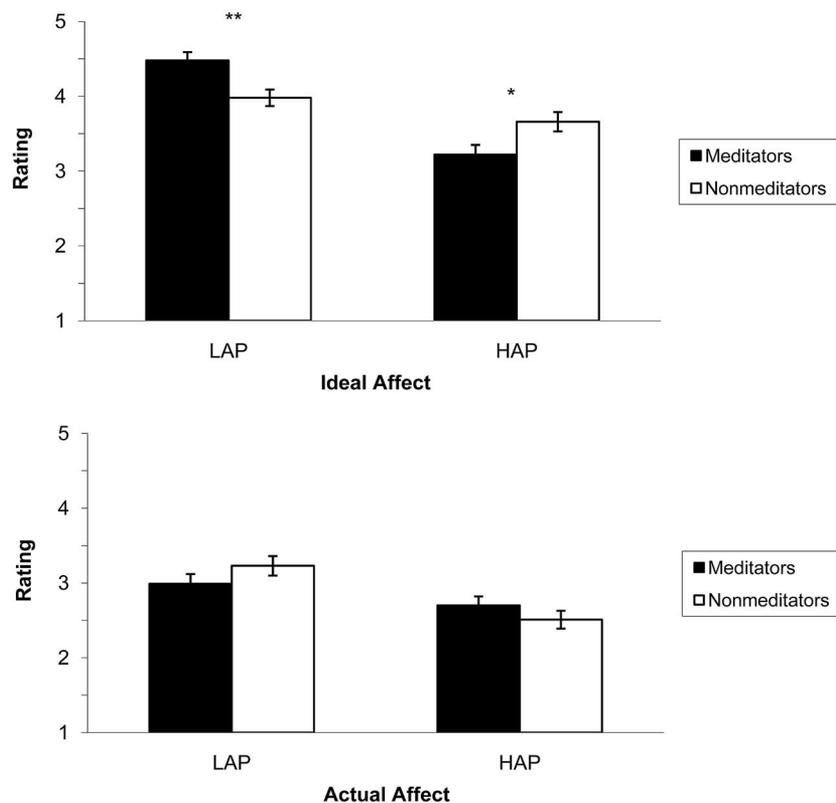


Figure 1. Group Differences Emerge in Ideal Affect, But Not Actual Affect (Study 1). Mean ratings of ideal LAP and ideal HAP (controlling for actual affect and age) as well as actual LAP and actual HAP (controlling for ideal affect and age) among Meditators and Nonmeditators. HAP = high arousal positive states; LAP = low arousal positive states. * $p < .05$. ** $p < .01$.

managing stress and promoting well-being (e.g., Kisiel et al., 2006; Scheiffelle, 2001); and (d) included homework. Participants in the *no class control group* did not receive any specialized training, but completed the same affect measures as participants taking the classes.

Because Study 1 found that meditation changes ideal more than actual affect, in this second study, we also included a well-being measure to examine whether the participants who completed the meditation interventions would differ in their well-being from those in the other two groups. Self-discrepancy theory (e.g., Higgins, 1987) as well as work by Mauss, Tamir, Anderson, and Savino (2011) suggests that participants in the meditation groups would experience a larger discrepancy between their ideal and actual calm and, therefore, have lower well-being than those in the nonmeditation groups. However, work by Carver and Scheier (1998) suggests that well-being is based on the degree to which people are (or are not) making progress toward their goals. Thus, if individuals perceive themselves as making progress toward their goals, they experience increases in their well-being; if they are moving further away from their goals, they experience decreases in their well-being, and if they are neither moving toward nor away from their goals, they experience no changes in their well-being. By administering a measure of well-being, we could test these different hypotheses.

We hypothesized that participants randomly assigned to the two meditation groups would value LAP more and HAP less at the end of the program than those in the two control groups. We did not predict differences in ideal affect between the two meditation groups because both types of meditation emphasize the value of calm and equanimity. We were again agnostic as to whether differences between the two meditation groups and the control groups in ideal negative affect and actual affect (LAP, HAP, HAN, or LAN) would emerge, but we predicted that if we found differences in actual affect, they would be smaller in magnitude than differences in ideal affect.

Method

Participants. Ninety-six Bay Area female students (mean age of 21.13 years, $SD = 3.49$) were recruited to participate in a “health improvement program study.” Students were eligible to participate if they were female (we recruited females only to increase sample homogeneity and because there was no evidence of gender differences in Study 1), had no previous formal experience with meditation or improvisational theater classes, and did not report any psychiatric symptoms (based on the PRIME-MD; Spitzer et al., 1994). Participants were told that they might not be assigned to a health improvement class, but that if they were, they had to take the class to which they were assigned. Of the 96 eligible participants recruited for the study, 74 finished the entire study (19 in mindfulness meditation, 17 in compassion meditation, 16 in the improvisational theater control, and 22 in no class control). There were no significant differences in the percentage of participants who dropped out by condition, $\chi^2(3, 96) = 5.51, ns$.

Conditions. The three classes were held on campus for eight weeks during the academic quarter and were taught by three men who were recognized experts in their fields, and blind to study hypotheses.

In the *mindfulness meditation* class, people learned to be “mindful,” or to pay attention to the present moment in a nonjudgmental way. The class was based on the book, *Full Catastrophe Living* (1990) by Jon Kabat-Zinn and consisted of philosophical readings, explanations of mindfulness and body-mind connections, the practice of mindfulness meditation, and group discussions about the practice. Although based on Buddhist principles, the class did not refer to Buddhism explicitly (Kabat-Zinn, 1990). Participants in the mindfulness meditation class received the book *Full Catastrophe Living* as well as two CDs (“Body Scan and Sitting Meditation” and “Lying Yoga and Standing Yoga”) by Bob Stahl, Ph.D. Participants were asked to practice meditation at home daily, using the guided meditations on the CDs.

In the *compassion meditation* class, participants learned to feel compassion for all beings, even strangers and adversaries. The class was based on a step-by-step protocol developed by Thupten J. Langri, a scholar in Tibetan classics and interpreter for the Dalai Lama. The protocol consisted of guided meditations that teach students to feel compassion toward other people, explanations about the sources of suffering and their relationship to feeling compassion, and group discussion. Participants in the compassion meditation class received the book *The Compassionate Life* by the Dalai Lama (2003) and CDs by Jonathan Landau. Participants were asked to practice the guided meditations daily at home.

In the *improvisational theater* class, people learned to be spontaneous and cooperative (contrary to popular belief, improvisational theater classes do not train students to be funny; jokes are viewed as disruptive). The class was based on the book *Improv: Improvisation and the Theater* (1979) by Keith Johnstone and consisted of exercises that encouraged team building, rapid problem solving, common sense, attention to reality, a positive “yes, let’s” attitude, listening, responding, and helping one’s partner as well as group discussion. Students in the improvisational theater class received the book *Improv Wisdom* by Patricia Ryan Madson (2005) and were instructed to read chapters and to do the exercises in the book at home. Further details about each class are available upon request.

Procedure and instruments. Before the beginning of the 8-week period (“Week 0”: before the first class), after four weeks (“Week 4”: after the fourth class), and at the end of the 8-week period (“Week 8”: after the eighth class), all participants completed an online questionnaire. We included the Week 4 assessment primarily to maintain contact with participants between weeks 0 and 8.

As in Study 1, we examined LAP, HAP, LAN and HAN; however, here we administered the full version of the AVI (Tsai & Knutson, 2006; Tsai et al., 2006). The mean aggregate scores were based on three items for actual and ideal LAP (i.e., calm, relaxed, and serene), HAP (i.e., enthusiastic, excited, and elated), LAN (i.e., dull, sleepy, sluggish), and HAN (i.e., fearful, hostile, nervous). Internal consistency estimates ranged from .69 to .75 for ideal LAP, from .77 to .82 for actual LAP, from .84 to .88 for ideal HAP, from .79 to .84 for actual HAP, from .62 to .85 for ideal LAN, from .72 to .77 for actual LAN, from .60 to .93 for ideal HAN, and from .62 to .71 for actual HAN across weeks 0, 4, and 8.

Participants also completed the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), an assessment of well-being. The scale consists of five items (e.g., “in most ways

my life is close to my ideal”), for which participants indicated their agreement or disagreement on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency for the mean aggregate score of these five items ranged from .91 to .93 across weeks 0, 4, and 8.

In addition, at Week 0, participants completed a demographic questionnaire. At Week 8, students in the three classes were asked about the amount of time they spent in class and doing homework.

To assess the validity of the Week 0, Week 4, and Week 8 ratings, participants completed an online log each evening. The log included a 17-item version of the AVI, which included the same LAP, HAP, LAN, and HAN items described above. Participants rated how often they actually and ideally felt these states “over the course of the day.” Internal consistency estimates for the weekly averages of the daily ratings ranged from .56 to .96, with a mean of .86. The correlations between the global ratings and weekly averages were extremely high (mean $r = .70$, ranging from .31 to .90). Thus, we were confident that the global ratings were valid assessments of actual and ideal affect during the respective week.

Study 2 Data Analyses and Results

Prior to testing our hypotheses, we assessed whether there were differences across the groups in terms of time spent in class and doing homework. There were no significant group differences for either variable ($ps > .37$). Participants attended 6.98 ($SD = 1.00$) out of the eight classes and spent 1.50 hours ($SD = 2.11$) doing their homework each week.

Does meditative practice alter ideal affect? We conducted univariate ANCOVAs by Group (Mindfulness Meditation, Compassion Meditation, Improvisational Theater, No Class) for each of the affect variables at Week 8, controlling for the same type of affect measured at Week 0 (to control for any baseline differences). In addition, as in Study 1, for ideal affect at Week 8, we also controlled for actual affect at Week 8, and for actual affect at Week 8, we controlled for ideal affect at Week 8 to assess the independent effects of meditation on actual and ideal affect at Week 8.

To test our hypotheses and maximize our sample sizes, we used three orthogonal planned contrasts. The first contrast examined whether there was a difference between the two control conditions in the outcome variables (Mindfulness Meditation = 0, Compassion Meditation = 0, Improvisational Theater = 1, No Class = -1). The second contrast examined whether there was a difference between the two meditation classes in the outcome variables (Mindfulness Meditation = -1, Compassion Meditation = 1, Improvisational Theater = 0, No Class = 0). For all outcome variables described below, there were no differences between the two control groups or between the two meditation groups (all $ps > .26$). Thus, we will not mention these contrasts any further. The third contrast directly tested our hypothesis and examined whether there was a difference between the two meditation groups combined and the two control groups combined (Mindfulness Meditation = .5, Compassion Meditation = .5, Improvisational Theater = -.5, No Class = -.5).

As predicted and depicted in Figure 2, the third planned contrast described above revealed that after eight weeks, participants in the two meditation groups valued LAP *more* than those in the two control groups, $F(1, 68) = 7.28, p < .01$, partial eta squared = .10.

An analysis of residual variance test revealed that the residual was not significant, suggesting that the contrast was a good fit for the data, $F_{resid}(2, 68) = .13, ns$. Contrary to prediction and Study 1, the planned contrast comparing the two meditation and two control groups was not significant for ideal HAP, $F(1, 68) = 1.05, ns$. As in Study 1, we did not find significant group differences between the two meditation and the two control groups for actual LAP [$F(1, 68) = .33, ns$] or actual HAP [$F(1, 68) = .66, ns$] or for ideal LAN [$F(1, 68) = .80, ns$], actual LAN [$F(1, 67) = 1.21, ns$], ideal HAN [$F(1, 66) = .09, ns$], or actual HAN [$F(1, 66) = 3.49, ns$].¹

Are there differences in well-being? We conducted a univariate ANOVA by Group (Mindfulness Meditation, Compassion Meditation, Improvisational Theater, No Class) for the aggregate SWLS score at Week 8. The main effect of Group was not significant, $F(3, 70) = .76, p > .52$, and neither were any of the planned contrasts described above, suggesting that the groups did not differ in their well-being. The results did not change when we controlled for aggregate SWLS score at Week 0.

In summary, as predicted and consistent with Study 1, participants in the meditation classes valued LAP more than those in the control conditions. There were no significant differences in actual affect (LAP, HAP, LAN, HAN) or in ideal negative affect. Contrary to our predictions and Study 1, engaging in meditation did not alter the degree to which participants valued HAP, suggesting that the group difference in ideal HAP observed in Study 1 may have been due to self-selection (i.e., people who value HAP less are more likely to meditate), or that changing ideal HAP in a culture that values HAP (i.e., the United States; see Tsai et al., 2006) may require more than eight weeks of meditation. Finally, although there were differences in ideal LAP among the groups, they did not result in differences in well-being, perhaps because participants in the meditation groups had just acquired the calm ideal and were neither moving toward nor away from this ideal (Carver & Scheier, 1998).

Study 3: Could Previous Findings Be Due to Expectancy Effects?

Our findings suggest that meditation alters ideal LAP, but does not alter ideal HAP, actual LAP, actual HAP, or ideal and actual negative states. It is possible, however, that these findings were due to expectancy effects. People may expect meditation to alter how much they want to feel calm, and therefore, their reports may

¹ In addition to these analyses, we used hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) to examine changes in ideal and actual affect over the 8-week period. We ran separate two-level models for each outcome variable of interest (i.e., ideal LAP, ideal HAP, actual LAP, actual HAP, ideal LAN, ideal HAN, actual LAN, and actual HAN), with level 1 representing repeated observations and level 2 representing participants. To test our hypotheses, we used dummy variables that represented the same three orthogonal contrasts that we used in the ANCOVAs to examine differences between the groups in the time slope associated with the outcome variables. As predicted and consistent with the results from the ANCOVAs, participants in the meditation classes showed a greater increase in ideal LAP compared with the two control groups. Again consistent with the ANCOVA results, participants in the meditation groups did not show a significantly greater decrease in ideal HAP compared with the control groups. Furthermore, as with the ANCOVAs, no other contrasts were significant for any of the other outcome variables. Results are available upon request.

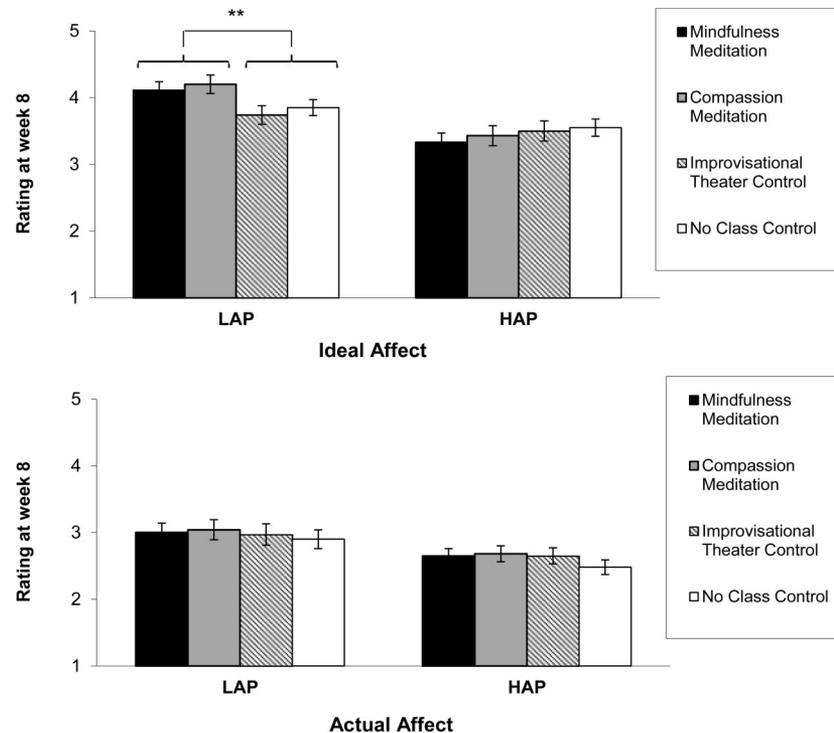


Figure 2. Effects of Meditation on Ideal and Actual Affect At the End of the 8-Week Program (Study 2). Mean ratings of ideal LAP and HAP (controlling for ideal affect at baseline, and for actual affect at Week 8) and actual LAP and HAP (controlling for actual affect at baseline, and for ideal affect at Week 8). ** $p < .01$.

reflect expectations rather than real change. If these findings were due to expectancy effects, we would predict that we would see the same pattern of findings when participants were asked to imagine taking the classes and to predict how taking each class would change their actual and ideal affect.

Although meditation researchers acknowledge the importance of ruling out expectancy effects (e.g., Delmonte, 1981), only a handful of studies have actually done so (e.g., Delmonte, 1985; Woolfolk & Rooney, 1981). The results from these studies, however, are mixed. For example, on one hand, Delmonte (1985) experimentally manipulated whether participants had positive or negative expectations of meditation, and found that physiological responses during meditation varied as a function of these expectations. These findings suggest that expectancy effects may account for some of the observed effects of meditation. On the other hand, Woolfolk and Rooney (1981) experimentally manipulated whether participants expected meditation to have calming or arousing effects, but found no differences in physiological and phenomenological responses, suggesting that expectations cannot account for the observed effects of meditation. No studies, however, have explicitly examined people's expectations regarding the effects of meditation on actual and ideal affect.

Method

Participants and procedure. One-hundred and two university students (mean age = 18.87 years, $SD = 1.14$; 55.88% female) participated in the study for course credit. They read short

descriptions of a mindfulness meditation, compassion meditation, and improvisational theater class based on the protocols used in Study 2 and on what information participants would have about their own classes after the first session and throughout the class.

Mindfulness meditation. Imagine you were to participate in a Mindfulness Meditation class, which meets two hours each week over an 8-week period. In this class, you learn to be "mindful" and pay attention to the present moment in a non-judgmental way. It consists of philosophical readings, explanations of mindfulness and mind-body connections, practice of mindfulness meditation, and group discussion.

Compassion meditation. Imagine you were to participate in a Compassion Meditation class, which meets two hours each week over an 8-week period. In this class, you learn to feel more compassion for all beings, even strangers and adversaries. It includes focusing the mind through breathing meditation, viewing attitudes, emotions, thoughts, and habits as sources of suffering, cultivating compassion by understanding that everyone has a wish to be happy, realizing that everyone's happiness depends on others' happiness, and feeling empathic concern for others, as well as visualizing compassion for strangers and adversaries.

Improvisational theater. Imagine you were to participate in an Improvisational Theater class, which meets two hours each week over an 8-week period. In this class, you learn to be spontaneous and cooperative. It consists of exercises that encourage team building, rapid problem solving, common sense, attention to real-

ity, a positive attitude, and listening and responding to one's partner.

After reading each description, participants rated how much they thought each class would change their actual affect (i.e., their "expected" actual affect) and their ideal affect (i.e., their "expected" ideal affect). Participants used a three-point scale ranging from -1 (decrease) to 0 (no change) to 1 (increase) to rate 12 affective terms that included LAP (calm, relaxed, serene), HAP (enthusiastic, excited, elated), LAN (dull, sleepy, sluggish), and HAN (fearful, hostile, nervous). Across the three conditions, internal consistency estimates ranged from .57 to .92 for expected ideal and actual LAP, HAP, LAN, and HAN, with a mean of .80.

Study 3 Data Analyses and Results

To examine the expected effects of meditation on ideal and actual affect, we conducted one-way repeated measures ANOVAs by Condition (Mindfulness Meditation, Compassion Meditation, Improvisational Theater) on the affect variables. Means and standard deviations are reported in Table 1.

Ideal Affect

The main effect of Condition was significant for ideal LAP [$F(1.62, 160.27) = 37.94, p < .001$, partial eta squared = .28] and ideal HAP [$F(2, 198) = 20.94, p < .001$, partial eta squared = .18]; participants expected that they would want to feel LAP more and HAP less after taking the meditation classes compared with the improvisational theater class ($ps < .001$). They also expected that they would want to feel LAP more after the mindfulness meditation class compared with the compassion meditation class ($p < .001$). Significant main effects of Condition also emerged for ideal HAN [$F(2, 198) = 3.82, p < .05$, partial eta squared = .04] and ideal LAN [$F(2, 198) = 9.35, p < .001$, partial eta squared = .09]. Participants expected that they would want to feel HAN less after taking the mindfulness class compared with the improvisational theater class, and that they would want to feel LAN less after

taking the mindfulness and improvisational theater classes than after the compassion meditation class.

Actual Affect

The main effect of Condition was also significant for actual LAP [$F(1.71, 169.62) = 77.86, p < .001$, partial eta squared = .44] and actual HAP [$F(1.89, 187.06) = 44.99, p < .001$, partial eta squared = .31]. Participants expected that they would actually feel LAP more and HAP less after attending the meditation classes compared with the improvisational theater class ($ps < .001$). They also expected to actually feel LAP more after taking the mindfulness meditation class compared with the compassion meditation class ($p < .001$). Significant main effects of Condition for actual LAN [$F(1.73, 170.86) = 8.69, p < .01$, partial eta squared = .08] and HAN [$F(1.80, 178.61) = 10.80, p < .001$, partial eta squared = .10] also emerged. Participants expected to feel less LAN after taking the improvisational class compared with the two meditation classes, and they expected to feel less HAN after the mindfulness meditation class compared with the improvisational theater and compassion meditation classes.

In summary, participants expected that the meditation classes would make them actually and ideally want to feel more calm and less excited than would the improvisational theater class. In reality, as demonstrated in Study 2, the meditation classes altered ideal LAP only. If expectancy effects accounted for our previous findings, we should have also observed significant differences in actual LAP and HAP in Study 1, and in actual LAP, actual HAP, and ideal HAP in Study 2, but none of these differences were observed. Similarly, participants expected that the meditation classes—in particular mindfulness meditation—would change their actual and ideal HAN and LAN, and yet in neither Study 1 nor Study 2 did we find such changes. Therefore, we conclude that the findings from Studies 1 and 2 were not likely due to expectancy effects. Instead, our findings suggest that meditation selectively increases how much people ideally want to feel calm.

General Discussion

Our findings suggest that at least initially (after 4 years in Study 1 and after 8 weeks in Study 2), meditation alters how people ideally want to feel more than how they actually feel. Specifically, meditation alters how calm people ideally want to feel. These findings support Affect Valuation Theory, which argues that cultural practices (such as meditation) alter ideal affect more than actual affect.

Interestingly and contrary to our predictions, engaging in meditation did not alter the degree to which participants valued HAP when they were randomly assigned to a meditation class (vs. a control group). Thus, the group difference in ideal HAP observed in Study 1 may be a result of self-selection: the less people value HAP, the more likely they may be to meditate. Additionally, because we conducted Study 2 in the United States, a culture that values HAP (see Tsai et al., 2006), it may be that changing HAP requires more than 8 weeks of meditation. Future studies that examine the effects of meditation on ideal affect in other cultural contexts and after longer periods of meditation are needed to address this issue.

Our findings may shed light on how meditation alters emotional life. Meditation interventions teach people the value of feeling

Table 1
Means, Standard Deviations, and F-Test p Values for Overall Group Differences for Expected Actual and Ideal Affect of the Three Classes in Study 3 ($N = 102$)

Expected affect	Class						p
	Mindfulness meditation		Compassion meditation		Improvisational theater		
	M	SD	M	SD	M	SD	
Ideal LAP	.74 _a	.42	.62 _b	.45	.30 _c	.53	***
Ideal HAP	.39 _a	.50	.42 _a	.44	.65 _b	.40	***
Ideal LAN	-.59 _a	.46	-.43 _b	.45	-.57 _a	.46	***
Ideal HAN	-.61 _a	.44	-.55	.46	-.50 _b	.48	*
Actual LAP	.78 _a	.40	.61 _b	.46	.08 _c	.45	***
Actual HAP	.17 _a	.41	.24 _a	.39	.61 _b	.40	***
Actual LAN	-.28 _a	.52	-.27 _a	.40	-.46 _b	.41	**
Actual HAN	-.58 _a	.46	-.44 _b	.43	-.35 _b	.43	***

Note. Different subscripts indicate classes that significantly differ from each other ($p < .05$).

* $p < .05$. ** $p < .01$. *** $p < .001$.

calm, and as people meditate, they may begin to desire or want more calm in their daily lives, even though the demands of daily life may make achieving it difficult. As people begin to value calm more, they may consciously or unconsciously begin to engage in more soothing activities and go to more relaxing places. Thus, it is possible that the people who are the most successful in maintaining their meditation practice and in attaining actual calm are the people who show the greatest initial changes in their ideal calm. Future longitudinal studies are needed to test these predictions.

Although we predicted greater meditation-related differences in ideal affect than actual affect, we were agnostic as to whether we would find meditation-related changes in actual affect because of the mixed nature of the existing literature. Scholars (e.g., [Toneatto & Nguyen, 2007](#)) have identified several reasons why some studies find an effect of meditation on actual affect whereas others do not (e.g., active vs. inactive control groups). Our findings raise the additional possibility that previously observed effects may have been at least partly due to ideal affect. People may have reported changes in their actual experience of positive and negative affect because they valued or desired these changes.

At the end of the 8-week period in Study 2, meditators showed a greater discrepancy between their ideal and actual LAP than did nonmeditators. This difference, however, did not translate into lower well-being among meditators compared with nonmeditators. On the one hand, these findings contradict previous findings that the greater the discrepancy between ideal and actual affect, the more depressed individuals are ([Tsai et al., 2006](#)). On the other hand, these findings are consistent with the idea that when people are acquiring new ideals, and new skills to achieve those ideals, discrepancies between who they are and who they want to be have relatively little impact on their psychological well-being ([Carver & Scheier, 1998](#)). Future studies that follow individuals over time may illuminate how long individuals can tolerate such a discrepancy before it leads to declines in well-being and the factors that moderate this process (e.g., resilience; [Ong, Bergeman, Bisconti, & Wallace, 2006](#)).

Although meditation teaches individuals to accept negative as well as positive emotions, we found no differences in the negative states that people wanted to feel in Studies 1 or 2. In other work, we have demonstrated that ideal affect differs from avoided affect, or the affective states that people want to avoid, and that people want to avoid negative states more than they want to feel them ([Koopmann-Holm & Tsai, 2012](#)). Therefore, it is possible that meditation alters the desire to avoid negative states even though it does not affect how much people want to feel them.

Limitations and Future Directions

Our studies were limited in several ways. First, they focused on short-term meditation. In future studies, it would be important to examine whether changes in actual LAP and other affective states occur after longer exposure to and engagement in meditative practice. If changes in ideal affect precede changes in actual affect, it is possible that the degree to which people value LAP may predict whether and when they begin to show changes in actual LAP. Similarly, it would be important to examine the ways in which meditation-induced changes in ideal affect alter other aspects of participants' emotional lives, including their regulation of

emotion (e.g., [Gross, 1998](#); [Miyamoto & Ma, 2011](#)) and their engagement in mood-producing behaviors.

Second, our studies focused on healthy university student samples, who are on average less distressed than the clinical samples included in other studies, and therefore, who may have had different motivations for engaging in the study. This may explain why although other studies have found meditation-induced changes in actual affect (e.g., [Fredrickson et al., 2008](#); [Smith et al., 1995](#)), we did not. Thus, it would be important to examine whether our findings generalize to clinical samples. We predict that even if meditation-related changes in actual affect do occur, we would still see greater changes in ideal affect, at least during the initial 8 weeks of exposure to meditation. Third, our studies were conducted in the United States. It would be important to examine whether our findings generalize to other cultural contexts. In Study 2, we found no effect of meditation on ideal HAP; this may be because ideal HAP is difficult to change in a culture that places such a premium on HAP states.

Despite these limitations, our findings clearly demonstrate the importance and utility of distinguishing between ideal and actual affect, and suggest that meditation initially alters affective life by increasing how calm people ideally want to feel.

References

- Baer, R. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125–143. doi:10.1093/clippsy.bpg015
- Britton, W. B., Haynes, P. L., Fridel, K. W., & Bootzin, R. R. (2010). Polysomnographic and subjective profiles of sleep continuity before and after mindfulness-based cognitive therapy in partially remitted depression. *Psychosomatic Medicine, 72*, 539–548. doi:10.1097/PSY.0b013e3181d1bad
- Carmody, J., & Baer, R. (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. doi:10.1007/s10865-007-9130-7
- Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior*. New York, NY: Cambridge University Press. doi:10.1017/CBO9781139174794
- Chambers, R., Lo, B. C. Y., & Allen, N. B. (2008). The impact of intensive mindfulness training on attentional control, cognitive style, and affect. *Cognitive Therapy and Research, 32*, 303–322. doi:10.1007/s10608-007-9119-0
- Dalai Lama, H. H. (2003). *The compassionate life*. Somerville, MA: Wisdom Publications, Inc.
- Davidson, R., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S., . . . Sheridan, J. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine, 65*, 564–570. doi:10.1097/01.PSY.0000077505.67574.E3
- Delmonte, M. (1981). Expectation and meditation. *Psychological Reports, 49*, 699–709. doi:10.2466/pr0.1981.49.3.699
- Delmonte, M. (1985). Effects of expectancy on physiological responsivity in novice meditators. *Biological Psychology, 21*, 107–121. doi:10.1016/0301-0511(85)90009-2
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75. doi:10.1207/s15327752jpa4901_13
- Feldman Barrett, L., & Russell, J. A. (1999). The structure of current affect: Controversies and emerging consensus. *Current Directions in Psychological Science, 8*, 10–14.
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through

- loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95, 1045–1062. doi:10.1037/a0013262
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2, 271–299. doi:10.1037/1089-2680.2.3.271
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348–362. doi:10.1037/0022-3514.85.2.348
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94, 319–340. doi:10.1037/0033-295X.94.3.319
- Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011). Loving-kindness and compassion meditation: Potential for psychological interventions. *Clinical Psychology Review*, 31, 1126–1132. doi:10.1016/j.cpr.2011.07.003
- Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion*, 8, 720–724. doi:10.1037/a0013237
- Johnstone, K. (1979). *Impro: Improvisation and the theatre*. London, UK: Methuen Publishing.
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York, NY: Delacorte Press.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10, 144–156. doi:10.1093/clipsy.bpg016
- Kisiel, C., Blaustein, M., Spinazzola, J., Schmidt, C. S., Zucker, M., & van der Kolk, B. (2006). Evaluation of a theater-based youth violence prevention program for elementary school children. *Journal of School Violence*, 5, 19–36. doi:10.1300/J202v05n02_03
- Koopmann-Holm, B., & Tsai, J. L. (2012). *Avoided affect: The significance of assessing feelings that people want to avoid*. Manuscript in preparation.
- Larsen, R. J., & Diener, E. (1992). Promises and problems with the circumplex model of emotion. In M. S. Clark (Ed.), *Review of personality and social psychology: Emotion* (pp. 25–59). Newbury Park, CA: Sage.
- Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PLoS ONE*, 6, e17798. doi:10.1371/journal.pone.0017798
- Lutz, A., Brefczynski-Lewis, J., Johnstone, T., & Davidson, R. J. (2008). Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *PLoS ONE*, 3, e1897.
- Lutz, A., Dunne, J. D., & Davidson, R. J. (2007). Meditation and the neuroscience of consciousness: An introduction. In P. D. Zelazo & E. Thompson (Eds.), *The Cambridge handbook of consciousness* (pp. 497–549). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511816789.020
- Madson, P. R. (2005). *Improv wisdom: Don't prepare, just show up*. New York, NY: Bell Tower.
- Mauss, I. B., Tamir, M., Anderson, C. L., & Savino, N. S. (2011). Can seeking happiness make people unhappy? Paradoxical effects of valuing happiness. *Emotion*, 11, 807–815. doi:10.1037/a0022010
- Miyamoto, Y., & Ma, X. (2011). Dampening or savoring positive emotions: A dialectical cultural script guides emotion regulation. *Emotion*, 11, 1346–1357. doi:10.1037/a0025135
- Ong, A. D., Bergeman, C., Bisconti, T. L., & Wallace, K. A. (2006). Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology*, 91, 730–749. doi:10.1037/0022-3514.91.4.730
- Pace, T. W. W., Negi, L. T., Adame, D. D., Cole, S. P., Sivilli, T. I., Brown, T. D., . . . Raison, C. L. (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*, 34, 87–98. doi:10.1016/j.psychneuen.2008.08.011
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Newbury Park, CA: Sage.
- Ricard, M. (2010). *Why meditate: Working with thoughts and emotions*. Carlsbad, CA: Hay House.
- Rinpoche, S. (1996). *Bringing the mind home*. San Francisco, CA: Rigpa Publications.
- Rinpoche, S. (2002). *The Tibetan book of living and dying: Revised and updated*. San Francisco, CA: Harper Collins.
- Scheffele, E. (2001). Acting: An altered state of consciousness. *Research in Drama Education*, 6, 179–191. doi:10.1080/13569780120070722
- Schupp, H. T., Cuthbert, B. N., Bradley, M. M., Birbaumer, N., & Lang, P. J. (1997). Probe P3 and blinks: Two measures of affective startle modulation. *Psychophysiology*, 34, 1–6. doi:10.1111/j.1469-8986.1997.tb02409.x
- Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine*, 21, 581–599. doi:10.1023/A:1018700829825
- Smith, W. P., Compton, W. C., & West, W. B. (1995). Meditation as an adjunct to a happiness enhancement program. *Journal of Clinical Psychology*, 51, 269–273. doi:10.1002/1097-4679(199503)51:2<269::AID-JCLP2270510217>3.0.CO;2-0
- Spitzer, R. L., Williams, J. B., Kroenke, K., Linzer, M., deGruy, F. V., Hahn, S. R., . . . Johnson, J. G. (1994). Utility of a new procedure for diagnosing mental disorders in primary care. The PRIME-MD 1000 study. *Journal of the American Medical Association*, 272, 1749–1756. doi:10.1001/jama.1994.03520220043029
- Thompson, B. L., & Waltz, J. (2007). Everyday mindfulness and mindfulness meditation: Overlapping constructs or not? *Personality and Individual Differences*, 43, 1875–1885. doi:10.1016/j.paid.2007.06.017
- Toneatto, T., & Nguyen, L. (2007). Does mindfulness meditation improve anxiety and mood symptoms? A review of the controlled research. *The Canadian Journal of Psychiatry*, 52, 260–266.
- Tsai, J. L. (2007). Ideal affect: Cultural causes and behavioral consequences. *Perspectives on Psychological Science*, 2, 242–259. doi:10.1111/j.1745-6916.2007.00043.x
- Tsai, J. L., & Knutson, B. (2006). *The Affect Valuation Index: Reliability and validity*. Manuscript in preparation.
- Tsai, J. L., Knutson, B., & Fung, H. (2006). Cultural variation in affect valuation. *Journal of Personality and Social Psychology*, 90, 288–307. doi:10.1037/0022-3514.90.2.288
- Tsai, J. L., Miao, F. F., & Seppala, E. (2007). Good feelings in Christianity and Buddhism: Religious differences in ideal affect. *Personality and Social Psychology Bulletin*, 33, 409–421. doi:10.1177/0146167206296107
- Tsai, J. L., Miao, F. F., Seppala, E., Fung, H., & Yeung, D. (2007). Influence and adjustment goals: Sources of cultural differences in ideal affect. *Journal of Personality and Social Psychology*, 92, 1102–1117. doi:10.1037/0022-3514.92.6.1102
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98, 219–235. doi:10.1037/0033-2909.98.2.219
- Woolfolk, R. L., & Rooney, A. J. (1981). The effect of explicit expectations on initial meditation experiences. *Applied Psychophysiology and Biofeedback*, 6, 483–491. doi:10.1007/BF00998733

Received June 26, 2012

Revision received October 29, 2012

Accepted October 31, 2012 ■