

The Challenge of Staying Happier:  
Testing the Hedonic Adaptation Prevention (HAP) Model

Kennon M. Sheldon

University of Missouri

Sonja Lyubomirsky

University of California, Riverside

in press, *Personality and Social Psychology Bulletin*

Running Head: Testing the Hedonic Adaptation Prevention Model

Keywords: Hedonic Adaptation, Well-Being, Variety, Appreciation

Abstract

The happiness that comes from a particular success or change in fortune abates with time. The Hedonic Adaptation Prevention (HAP) model specifies two routes by which the well-being gains derived from a positive life change are eroded—the first involving bottom-up processes (i.e., declining positive emotions generated by the positive change) and the second involving top-down processes (i.e., increased aspirations for even more positivity). The model also specifies two moderators that can forestall these processes—continued appreciation of the original life change and continued variety in change-related experiences. We formally tested the predictions of the HAP model in a 3-month three-wave longitudinal study of 476 students. Temporal path analyses and moderated regression analyses provided good support for the model. Implications for the stability of well-being, the feasibility of “the pursuit of happiness,” and the appeal of overconsumption are discussed.

## The Challenge of Staying Happier:

### Testing the Hedonic Adaptation Prevention (HAP) Model

The pleasure of success and the ignominy of failure abate with time. So does the thrill of a new sports car, the pain over a failed romance, the delight over a promotion, and the distress of a scary diagnosis. This phenomenon, known as hedonic adaptation (HA), has drawn increasing interest from both psychologists and economists (e.g., Diener, Lucas, & Scollon, 2006; Easterlin, 2006; Frederick & Loewenstein, 1999; Kahneman & Thaler, 2006; Lucas, 2007a; Lyubomirsky, 2011; Lyubomirsky, Sheldon, & Schkade, 2005; Wilson & Gilbert, 2008). Hedonic adaptation is generally viewed as beneficial, because it limits the severity and duration of the blows and traumas people receive in life. In an analogy coined by Wilson and Gilbert (2003, 2005), people have a “psychological immune system” that helps them cope with, minimize, and eventually forget the upsets of life—a process of which they are typically unaware (Wilson & Gilbert, 2005).

Still, it appears that the HA system can be overwhelmed by strong or persisting negative life changes. For example, large-N longitudinal studies by Lucas and colleagues have persuasively shown that well-being decreases substantially after such adverse life events as unemployment, disability, divorce, and widowhood, and does not completely recover (Lucas, 2005, 2007b; Lucas, Clark, Georgellis, & Diener, 2003, 2004). This research suggests that strong negative events can throw people permanently “off kilter,” exerting a durable negative influence on them such that they remain at a lower baseline than before.

But what about positive events? Can some favorable life changes bring about

permanent increases in a person's happiness? Compared to the negative domain, the literature on HA to positive life changes is relatively scarce. Interestingly, every one of the published studies evidences fairly rapid and apparently complete adaptation to positive changes. The most widely-cited study is that of Brickman and his colleagues (1978), who reported that lottery winners were no happier up to 18 months after the news than those who had experienced no windfall. Findings that boosts in citizens' average incomes in many nations have not been accompanied by increases in average well-being – for example, that Americans' mean happiness scores shifted slightly from 7.5 in 1940 to 7.2 in 1990, a period when disposable income more than tripled (Lane, 2000) – also suggest the work of HA. More compelling evidence comes from prospective longitudinal investigations. For example, German residents who had married during a 15-year long study initially obtained a significant happiness boost, but reverted to their baseline after 2 years on average (Lucas et al., 2003; see also Lucas & Clark, 2006). Another relevant longitudinal study followed high-level managers for 5 years to track their job satisfaction before and after a voluntary job change (Boswell, Boudreau, & Tichy, 2005). Much like with marriage, the managers experienced a burst of satisfaction immediately after the move or promotion, but their satisfaction plummeted within a year, yielding evidence of adaptation. In contrast, managers who chose not to change jobs showed relatively stable satisfaction.

In short, HA may challenge the popular belief that everyone can become happier simply by changing his or her life for the better (Lyubomirsky, 2008; Lyubomirsky et al., 2005; Sheldon, Boehm, & Lyubomirsky, in press). If no matter what happens, people will ultimately get used to it and end up back where they started, then is there no hope for

“staying happier?” In the current research, we sought to test our Hedonic Adaptation Prevention (HAP) model. The model purports to explain not only why happiness boosts typically return to baseline, but also, how the HA process can be arrested, so that the initial happiness boost persists. Notably, the general model could also be applied in attempts to *speed* HA to negative events, as well as in attempts to *slow* HA to positive events. Nevertheless, we call it the Hedonic Adaptation *Prevention* model here because our focus is on how HA may be prevented or forestalled such that the well-being boosts associated with positive life changes can be maintained to the maximal extent.

#### *The Hedonic Adaptation Prevention Model*

Figure 1 presents the overall HAP model, which goes significantly beyond our previous work, because it focuses on the processes underlying hedonic adaptation rather than on the determinants of happiness, which is the focus of our sustainable happiness model (Lyubomirsky et al., 2005). The HAP model has not yet been tested, although it was discussed in a chapter by Sheldon et al. (in press). As shown, the sequence begins with a “positive life change,” which produces an initial boost ( $a$ ) in well-being ( $WB+a$ ). Following previous research, we define WB as the combination of global self-reports of high life satisfaction and positive affect, and low negative affect (Diener et al., 1999). It is also worth noting that we make a distinction in our model between one large event (or life change) that occurs in a person’s life – the *seminal change* – and the discrete daily/weekly *positive events* – the downstream episodes – that it produces. The positive events could be internal (e.g., a happy memory of the positive change popping into one’s mind) or external (e.g., meeting a new friend as a result of the change).

The model then proposes two paths to adaptation such that the person returns to

his or her original *WB* over time. The first route is through positive emotions (see the bottom path in Figure 1: *amount of positive emotions*) – or, more accurately, through *declines* in positive emotions. That is, the positive emotions that the individual initially derives from the change become less and less frequent over time and may cease altogether. For example, one may experience many positive events after buying a new convertible, but those occasions will become less and less numerous, and the positive emotions (excitement, happiness, pride, etc.) will become less frequent and intense over time, leading to reductions in the initial *WB* gains. This path involves a bottom-up (emotional) perspective on *WB*, and the notion that high happiness occurs via the accumulation of many small positive events and experiences (Diener, 1994).

However, we also argue that it is possible to adapt even when one *continues* to have positive events and positive emotions as a result of those events. For example, after losing weight, a person's social life might *continue* to be improved and regularly yield her positive episodes and emotions, but she'll begin to feel that those experiences are simply part of her new life, becoming her new norm. In other words, her aspiration level regarding the expected quality of her life has now increased (see the top path: *aspiration level*), and she will crave even more popularity. For an extreme example, after *Thriller* became the biggest-selling album of all time, Michael Jackson reportedly stated that he would not be satisfied unless his next album sold twice as much. The idea of an aspiration-level path to adaptation is very similar to Kahneman's (1999) notion of the operation of a "satisfaction treadmill" or "aspiration treadmill," which arises when the standard with which experiences are judged shifts. Kahneman suggested that people can essentially adapt to their new level of positive experience and thus *require* that new level

simply to maintain their initial happiness. Changes in aspiration level can provide a top-down (cognitive) route affecting changes in global well-being, by shifting how ongoing positive experiences are framed and contextualized. This process also tends to lead the person back to the initial happiness level (T1 *WB* in Figure 1).

Can either of these two processes be forestalled? Figure 1 also presents the two primary moderators specified by the complete HAP model – variety and appreciation. Four hypotheses were proposed concerning these moderators: That the more *variable* the small positive events that flow from the initial change, the more likely they will continue to produce positive emotions (see moderator *1a*); that the more variable the resultant positive emotions, the more likely they will sustain the initial boost in *WB* (see moderator *1b*); and that the more variable the positive events, the less they will create rising aspirations (see moderator *1c*).

Why should this be the case? By definition, adaptation occurs only in response to constant or repeated stimuli, not to dynamically varying ones (Frederick & Loewenstein, 1999; see also Helson, 1964; Parducci, 1995). Thoughts and behaviors that are varied and unexpected or surprising appear to be innately stimulating and rewarding (Berlyne, 1970; Pronin & E. Jacobs, 2008; Rolls, Rolls, Rowe, & Sweeney, 1981; see Ebstein, Novick, Umansky, Priel, & Osher, 1996; Suhara et al., 2001, for links to dopamine activity). Stated differently, after an individual completely understands and expects the experiences that a change produces, the experiences will no longer have the same emotional impact (Wilson & Gilbert, 2008), and he or she will drift back towards his or her initial well-being (*T1 WB*). Maintaining the variability and surprises inherent in the experiences and in the emotions forestalls this process. Also, the more variable and surprising the positive

events deriving from the initial change, the less likely it is that one will raise one's aspiration level (i.e., coming to desire a new and better car, job, or relationship; see moderator 1c). "The old one remains interesting; why should I need a new one?" One applied implication of this view is that many people cope with their HA to their prior purchases and acquisitions by overconsuming and overspending. However, if they can continue to derive pleasure from what they already have, in part from varied experiences of those possessions, then they can resist increasing aspirations for even more (Chancellor & Lyubomirsky, 2011).

These moderator predictions are supported by research on the benefits of variety (e.g., Leventhal, Martin, Seals, Tapia, & Rehm, 2007; Sheldon et al., in press) and surprise (e.g., Wilson & Gilbert, 2008). Sheldon and colleagues (in press) specifically tested the effects of variety within the context of the HAP model, showing that reporting more varied experiences of a life change predicted maintained change in well-being over a 2-week period. They also showed that participants randomly assigned to vary the acts of kindness over a 10-week period better maintained their kindness-related boosts in happiness, compared to those assigned to do the same acts of kindness every week. The current article tests the effects of variety in a new way, as a moderator of the bottom-up and top-down paths in the HAP model.

As an additional moderator hypothesis, the model specifies that continued *appreciation* of the positive change – one's new romance, new hobby, or new weight loss – can inhibit rising aspirations (and thus thwart adaptation; see moderator 2) (e.g., Kahneman & Thaler, 2006; Lyubomirsky, 2011). To appreciate something is to savor it, to feel grateful for it, to recognize that one might never have gotten it, or might lose it.

Appreciation is the psychological opposite of adaptation: Rather than taking X for granted and no longer noticing it, one instead amplifies one's attention towards X, lending it more power to have impact. Consider a man who buys a work of art. At first he loves it on his wall, and shows it to all his friends. Suppose that rather than beginning to take the art for granted, he instead continues to develop appreciation for it, perceiving and taking pleasure in new features and subtleties within the work, and recognizing how fortunate he is to possess the art. Appreciating how his life experiences have improved since the purchase – and recognizing that this improvement is neither inevitable nor permanent – will help to thwart HA to the purchase.

### *The Current Study*

In this study, we attempted a complete test of the HAP model displayed in Figure 1, using data collected in three waves over 12 weeks from 476 participants. Participants' initial well-being was measured at Time 1 ( $T_1$ ), and again at Time 2 ( $T_2$ ). Also at  $T_2$ , participants identified a positive life change that had occurred since  $T_1$ , making multiple ratings of that change. Finally, at Time 3 ( $T_3$ ), participants rated their well-being and the earlier life change again. This enabled us to test whether changes in positive events, the positive emotions associated with those events, and the aspirations resulting from those events predict changes in well-being from  $T_1$  to  $T_2$ , as well as the maintenance of those changes at  $T_3$ . In addition to testing the two mediational paths specified by the HAP model, we were able to test the predicted moderator effects involving variety and appreciation.

## Methods

### *Participants and Procedure*

Participants were 481 students in a social psychology class, 182 men and 288 women (11 did not specify their gender), 85% Caucasian, who participated for extra course credit. The data were collected during two consecutive semesters (Spring and Fall) and were combined into one dataset. (Small differences between the two semesters will be considered below.) During both semesters, three in-class questionnaires were administered approximately 6 weeks apart. Ninety-two participants began but did not complete the study. These 92 participants did not differ from the 481 complete participants on T<sub>1</sub> well-being or gender composition (both  $ps > .25$ ).

In the T<sub>2</sub> questionnaire, under the heading “Positive Life Changes,” participants read:

*“Fortunately, good things happen to all of us, at least from time to time! In this part of the questionnaire, we’d like you to think back to the best change that has happened to you in the last 6 weeks (since you completed the first questionnaire). What was the most positive, inspiring, or meaningful change that you experienced during this time? This could involve an unexpected achievement, a new relationship, a financial windfall, a personal appearance change, or even a new vehicle you acquired. It’s up to you, as long as it represents some kind of positive change in your life. Please take a minute to describe the change that you bring to mind. Afterwards, we’ll ask you some further questions about this change.”*

Participants described a wide variety of positive changes via this idiographic listing procedure and rated their change on several dimensions, as described below. Examples of positive changes provided by participants included “I was nominated by a faculty member to the MSA sustainability committee,” “I went back to the church,” “I gained a really great relationship with someone,” and “I stopped working primarily in the cafeteria and switched over to Stars (coffee shop). I have more fun at work, I like those I work with more. I’m not getting more money, but I learned new skills.” After they wrote about their positive change, participants were asked to classify the change in several ways: 1) relevance to achievement vs. relationships, 2)

relevance to money or appearance, 3) relevance to activity versus circumstance, 4) length of time since the change occurred, and 5) relevance to approach vs. avoidance goal. Analyses revealed that the type of positive change did not modify any of the basic patterns that we found; thus, these results will not be discussed further. In the T<sub>3</sub> questionnaire, participants were reminded about the positive change they wrote down at T<sub>2</sub>, and asked to make further ratings of that change.

### *Measures*

*Well-being.* At each time point, participants were administered the 20-item Positive Affect Negative Affect Schedule (Watson, Tellegen, & Clark, 1988) and the 5 item Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), both worded with respect to “right now in your life.” As in previous research (Diener, 1994; Sheldon & Elliot, 1999; Sheldon & Lyubomirsky, 2006), a global well-being score was computed at each time period by averaging positive affect and life satisfaction and subtracting negative affect. Mean WB levels did not change across the three administrations, at the sample level, likely due to unmeasured “negative” events that were also occurring in participants’ lives, such as increasing schoolwork.

*Positive events.* In order to assess the positive events deriving from the initial life change, we focused on “thought-events,” in the form of attention to or awareness of the change. Given that our interest is in hedonic adaptation, thought-events are critical indicators of whether one has adapted to (i.e., stopped thinking about, stopped being aware of, or stopped attending to) a life change. Indeed, it is possible to have a “real” event (i.e., driving one’s new car on the weekend) while not thinking about the car itself, or appreciating its properties; this is because, with respect to hedonic adaptation, what

matters is how much one is attending to or continuing to think about the life change. To assess the extent to which participants were still deriving positive events and experiences from the change at T<sub>2</sub> and T<sub>3</sub>, participants rated “How often do you think about this change?” and “How often are you aware of, or do you notice, this change?” using a 1 (*not at all*) to 5 (*very much*) scale. Showing evidence of basic hedonic adaptation to the initial positive change, this variable declined from 3.98 (at T<sub>2</sub>) to 3.21 (at T<sub>3</sub>),  $t(480) = 10.78$ ,  $d = .49$ ,  $p < .01$ .

*Positive emotions.* To measure the positive emotions associated with the positive change, at T<sub>2</sub> and T<sub>3</sub>, participants rated “how you feel right now, as you think back to the change?” in terms of the five positive emotions of *happy, pleased, joyful, relaxed, and cheerful*, using the same 1 (*not at all*) to 5 (*very much*) scale. Again, showing evidence of basic hedonic adaptation, this variable declined from 3.98 to 3.56 from T<sub>2</sub> to T<sub>3</sub>,  $t(480) = 8.08$ ,  $d = .37$ ,  $p < .01$ .

*Variety.* We defined “variety” as the extent to which experiences deriving from a life change occur in different ways, take unexpected twists, or provide surprising permutations. All of these characteristics reference whether the experiences generated by the change are dynamic, varying, and unexpected, as compared to constant, repeated, and predictable. Specifically, we employed the following items: “How much new variety has this change brought in your life?”; “How surprising, still, are the experiences that come from this change?”; “How unexpected are the experiences that come from this change?”; and “How many different ways do you experience, or think about, this change?” (1 = *not at all*, 5 = *very much*). Evidencing basic hedonic adaptation, this variable declined from 3.30 to 3.03 between T<sub>2</sub> and T<sub>3</sub>,  $t(480) = 5.23$ ,  $d = .24$ ,  $p < .01$ .

*Appreciation.* To “appreciate” a life change is to be glad it came to pass, to savor and value it, to feel grateful for it, and/or to recognize that it may never have occurred (Sheldon et al., in press). Some of the terms in this description are constructs in their own right (i.e., savoring, gratitude). To avoid entangling these other constructs with our measure of appreciation, we assessed appreciation with a single prototype item: “How much do you continue to appreciate, even today, the fact that this change occurred?”<sup>1</sup> Again, indicating evidence of basic hedonic adaptation, this variable declined from 4.12 to 3.51 between T<sub>2</sub> and T<sub>3</sub>,  $t(480) = 10.33$ ,  $d = .47$ ,  $p < .01$ .

*Aspirations for more.* To aspire for more of something is to feel that the current quantity or quality of that something is not enough, and to feel that one wants and deserves even more of it. To measure aspirations, at T<sub>2</sub> and T<sub>3</sub>, participants rated “In the near future this change will have to get a lot better before I’m satisfied” and “I deserve even more of the good things this change gave me,” using the same scale as above. Presumably as a consequence of HA, this mean increased marginally between T<sub>2</sub> and T<sub>3</sub>, from 2.68 to 2.79 ( $t(480) = 1.89$ ,  $d = .09$ ,  $p < .10$ ).

## Results

### *Descriptive Statistics*

Tables 1 and 2 contain descriptive statistics and intercorrelations, respectively, for all study variables. Mirroring previous empirical and anecdotal evidence, consistent evidence of sample-wide hedonic adaptation was observed from T<sub>2</sub> to T<sub>3</sub>, such that the positive life change that occurred between T<sub>1</sub> and T<sub>2</sub> was associated with fewer thought events, less positive affect, less variety, and less appreciation at T<sub>3</sub>, compared to T<sub>2</sub>. As described above, this pattern of results spotlights the automatic HA processes targeted for

prevention by our model. Of course, our aim was to predict participant variations in these parameters as specified by the HAP model, not sample mean levels.

Comparison of the Spring and Fall subsamples revealed several significant mean differences (i.e., T<sub>3</sub> WB was higher in Spring than in Fall, likely because of climate differences), but we found no interactions between subsample and the predicted path coefficients. We included a dummy variable in the main analysis (described below) to control for the sample mean differences.

#### *Testing the Basic HAP Path Model*

We used LISREL-8.8 (Joreskog & Sörbom, 2005) to test the basic HAP model illustrated in Figure 1. The primary outcome of interest was T<sub>3</sub> WB, as the HAP model explains how a positive life change between T<sub>1</sub> and T<sub>2</sub> can still have effects on well-being at T<sub>3</sub>. We controlled for T<sub>1</sub> WB, such that higher scores represented the amount of positive change in participants' WB compared to their original baseline. T<sub>3</sub> positive events, positive emotions, and aspirations were used to predict the T<sub>3</sub> WB outcome, as these represented the period in which HA presumably has most of its effects. T<sub>2</sub> positive events, positive emotions, and aspirations were partialled out of the corresponding T<sub>3</sub> variables, so that the T<sub>3</sub> predictors would reference only processes occurring between T<sub>2</sub> and T<sub>3</sub>. The model fit the data well, with all predicted path coefficients significant, with NFI, CFI, and GFI equaling .93, .95, and .98, where values greater than .90 indicate acceptable fit (Byrne, 2006), and with a RMSEA of .054, where values < .06 indicate acceptable fit (Hu & Bentler, 1999; Kashy, Donnellan, Ackerman, & Russell, 2009; Kline, 2005). Although the chi-square with 14 degrees of freedom was significant ( $\lambda^2 = 32.28, p < .01$ ), this is common with large models.

Figure 2 presents the path coefficients yielded by this analysis, including test-retest coefficients and also coefficients for the subsample dummy variable. As shown, still noticing and experiencing the initial positive life change at T<sub>3</sub> had two effects: First, it predicted reporting more positive emotions associated with that change, and second, it predicted desiring even more of that positive change. Turning to the T<sub>3</sub>WB outcome, as hypothesized by our model, raising aspirations (i.e., desiring even more) negatively predicted T<sub>3</sub> WB, while stronger change-related positive emotions positively predicted T<sub>3</sub> WB. This parallel pattern of results illustrates an important paradox of happiness—namely, that positive life changes may contain the seeds of their own undoing, via the raising standards and expectations that tend to co-occur with positive emotions. We also ran a second model in which a path was specified between T<sub>2</sub> WB and T<sub>3</sub> WB. All coefficients remained significant in this analysis, indicating that the HAP processes affected fluctuations in WB between T<sub>2</sub> and T<sub>3</sub> as well as between T<sub>1</sub> and T<sub>3</sub>.

Next, we tested two alternative models in which the variables were differently arranged. Alternate 1 placed positive emotions at the far left of the model, set to predict aspirations and positive events, which were set to predict WB. Alternate 2 placed aspirations at the far left of the model, set to predict positive emotions and positive events, which were set to predict WB. Because these models do not represent the correct causal sequences described by the HAP model, we expected them not to fit the data as well. In Alternate 1, the path from positive emotions to aspirations was not significant, and the overall model fit somewhat less well than the main model ( $\chi^2[14] = 74.6$  vs.  $46.8$ ,  $RMR = .059$  vs.  $.051$ ). In Alternate 2, the paths from positive emotions to WB and from aspirations to positive emotions were not significant, and the model fit much less well

than the main model ( $\chi^2[14] = 145.9$  vs. 46.8, RMR = .081 vs. .051).

### *Testing Moderators of the HAP Paths*

According to the HAP model, the way to optimize  $T_3$  WB is to maximize the strength of the path from positive events to positive emotions, to minimize the strength of the path from positive events to raising aspirations, and to maximize the strength of the path from positive emotions to  $T_3$  WB. To examine these processes, we conducted six regressions that served to separately test our two moderator variables, variety and appreciation. Two of the regressions focused on the path from positive events to aspirations, two focused on the path from positive events to positive emotions, and two focused on the path from positive emotions to  $T_3$  WB. In each regression, the relevant outcome (aspirations, positive emotions, or WB at  $T_3$ ) was predicted from the (centered) positive event (or positive emotion) variable, the centered moderator variable, and the multiplicative product term of these two variables. Also included were the  $T_2$  versions of positive events (or positive emotions) and the  $T_2$  version of the two moderator variables, to focus the analysis on processes occurring between  $T_2$  and  $T_3$ . As one complete example, in one model,  $T_3$  WB was regressed on  $T_1$  WB, centered  $T_2$  Positive Emotions, centered  $T_3$  Positive Emotions, centered  $T_2$  Appreciation, centered  $T_3$  Appreciation, and a product interaction term (centered  $T_3$  Appreciation X centered  $T_3$  Positive Emotions). We predicted that the interaction term coefficient in this analysis and in the other five analyses would be significant.

Table 3 contains the interaction coefficients yielded by these regression analyses. Three of our four interaction hypotheses were supported. Concerning the top half of the model: The more that the experiences deriving from the initial change were rated as

variable, and the more that the positive change continued to be appreciated, the weaker the path from positive events to increasing aspirations. These two significant interactions support the HAP model's premise that the processes by which positive events raise peoples' aspirations for even more positivity can be dampened, if those events are continually appreciated and experienced in varied ways. These two interactions are graphed in Figure 3. Concerning the bottom half of the model: The more that the positive experiences deriving from the initial life change were reportedly characterized by variety, the greater the effect of emotions on T<sub>3</sub> WB (see the right panel of Figure 4). This finding supports the prediction of the HAP model that accumulating small positive emotions have greater impact on a person's global well-being if those emotions arise from varied experiences.

Interestingly, our moderator hypothesis was not supported for the path from positive events to positive emotions. That is, at T<sub>3</sub>, the rated variety produced by the change did not moderate the strength of the path from positive events to positive emotions at T<sub>3</sub>. Instead, variety had a significant main effect on positive emotions ( $\beta = .44, p < .01$ ), such that stronger positive emotions were reported to the extent that the change was experienced in a varied way (see Sheldon et al., in press, for an analogous result). This finding indicates that variety may have a direct effect on the key "bottom-up" path within the HAP model, reducing the likelihood that change-resultant positive emotions decline in their frequency and intensity. Again, however, these effects may not be moderated by the positive events variable, suggesting a minor revision to the HAP model.

Although the appreciation variable was not expected to moderate relations in the

bottom portion of the HAP model (Sheldon et al., in press), we tested these interactions as well. As expected, appreciation did not moderate the events to emotions link (see Table 3). However, we did discover a significant appreciation by positive emotions interaction (see Table 3 and left panel of Figure 4), such that the more people reported continuing to appreciate the initial life change, the stronger the effect of change-related positive emotions on global WB.

### Discussion

In this research, we tested a complex new model of the hedonic adaptation process, focusing on the means by which an initial “positive life change” might still have downstream effects on peoples’ happiness 4 to 8 weeks later. We found good support for the HAP model, which specifies two largely independent pathways influencing the maintenance of well-being changes over time. Specifically, two counteracting main effects were apparent at the last assessment ( $T_3$ ), which took place from 4 to 8 weeks after our participants reported on a favorable change in their lives. First, the more participants were still thinking about and attending to their positive change at  $T_3$  (i.e., the more positive thought-events), the more they were still deriving positive emotions from that change, and thus the happier they still were. We believe this represents a “bottom-up” process, in which the accumulation of positive emotional experiences over time augments peoples’ summary judgments of their own well-being (Diener et al. 1999).

Second, the more participants were still thinking about and attending to the original change, the more they aspired to even more positive change—a process that ultimately detracted from their  $T_3$  well-being. We believe this represents a “top-down” process (Diener et al., 1999), in which continued attention to a new success or change in

fortune alters people's standards for what they require in order to be happy, such that they want and expect even more positive conditions than they already have. Notably, these counteracting effects illustrate a seeming paradox of happiness—that is, that the same process (continued attention to the good things in life) can support and undermine happiness at the same time.

The HAP model also specifies two factors that moderate this process of hedonic adaptation—that is, two ways in which happiness-promoting processes can be maintained and happiness-undermining processes forestalled. Indeed, our study found persuasive evidence to support our predictions regarding “hedonic adaptation prevention,” showing that those who continue to appreciate their original positive change, and continue to derive varying experiences from that change, are least likely to fall prey to rising aspirations, and most likely to obtain continued happiness benefits from change-derived positive emotions. In all, these findings support the notion that variety and surprise spice up life in ways that sustain well-being (Sheldon et al., in press; Sheldon & Lyubomirsky, 2006, 2009; Wilson, Centerbar, Kermer, & Gilbert, 2005) and that appreciation and gratitude preserve happiness by preventing people from taking the good stuff for granted (Boehm, Sheldon, & Lyubomirsky, in press; Emmons & McCullough, 2003; Koo, Algoe, Wilson, & Gilbert, 2008; Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011; Sheldon & Lyubomirsky, 2009). These findings have major implications for designers of positive interventions, treatments, and programs, as they consider how to boost peoples' experience of positive life changes without triggering processes that ultimately undermine those changes' salutary effects.

We did not find support for the role of one moderator proposed by Sheldon and

his colleagues (in press)—the idea that the variety of the events deriving from a positive life change would amplify the effect of event quantity upon the amount of positive emotions deriving from the change. Instead, variety (as well as positive thought-events) was found to have a direct main effect on positive emotions. We suggest that both of these factors are important for continuing the stream of positive emotions associated with a positive change, but that they do not necessarily amplify or attenuate each other's effects. For example, after purchasing a fancy new gadget, the more varied the experiences one has with the gadget (e.g., using its multiple and novel new features), and the more positive thought-events one has with respect to the gadget (e.g., calling to mind how cool it is even when not using it), the more joy, pride, and excitement one feels. However, the variety of the experiences and the number of experiences appear to have independent effects on how one feels. Thus, we suggest that moderator *Ia* (see Figure 1) be dropped from the HAP model, and that variety be included as a variable that directly influences positive emotions, rather than as a moderator of the path between positive events and positive emotions. Further research is needed, however, to justify this modification.

In addition to failing to find one predicted moderator relationship, we also found a moderator relationship that was not predicted: The link between accumulating positive emotions and maintained global well-being was stronger when individuals continued to appreciate their original positive life change. We suggest that this may reflect a weighting effect, such that the sense of greater appreciation for the initial positive change accords the positive emotions derived from that change a greater influence when participants make global well-being judgments. That is, if a person truly appreciates a change in

fortune, her associated feelings of thrill, curiosity, and pride may loom larger when she assesses her life as a whole. However, future studies will be needed to test this idea.

### *Broader Implications*

For the last decade, we have been investigating the question of whether it is possible to *increase* happiness, and, if yes, how this can be accomplished (e.g., Lyubomirsky, 2008; Lyubomirsky et al., 2005; Sheldon & Lyubomirsky, 2009). That is, given copious evidence that happiness is relatively stable across time (Costa, McCrae, & Zonderman, 1987; Headey & Wearing, 1989), can people's average happiness levels be reliably improved? We believe our research to date has established that boosts are indeed realizable (for reviews, see Lyubomirsky, 2011; Sheldon & Lyubomirsky, 2006; Sin & Lyubomirsky, 2009), supporting a key assumption of the Western notion that happiness might be fruitfully pursued. The next-generation question thus becomes, how are happiness boosts best *maintained*? We believe that the present study offers important new information concerning this question.

Readers may be wondering about a possible implication of our findings: That people should devote their efforts to getting the most out of what they already have, rather than trying to improve their lives further. Do our model and results imply that people should avoid aspiring for a better life? This is a complex question, because we are decidedly not advocating that people should not aspire to improve their lives. Indeed, adaptation to positive life changes may be functional – the “quest for more” may be an essential driver of progress at the societal level and personal growth at the individual level. What we *are* advocating is that “the quest for more” should not be pursued in a mindless or addictive fashion, such that people continually want more and more in order

to fill a hole in their psychological lives. The striving for ever-greater fortune and success should also not be set upon “too soon”—before one has the chance to savor, appreciate, and experience the bounty of rewards from one’s latest achievement or turn of luck. By continuing to appreciate what they have, and continuing to forge varied experiences out of it, individuals might extract the most from their current life configuration and avoid rejecting that configuration prematurely, in a restless search for an illusory or idealized perfect future.

One illustration of this idea can be found in the literature on overconsumption, overspending, and materialism. We believe that overconsumption is often driven by hedonic adaptation (Chancellor & Lyubomirsky, 2011). In other words, because of the very adaptation processes examined in the current research, the appeal of the new car, house, or handbag that initially brought pleasure begins to fade, such that people are soon tempted to buy an even better car, house, or handbag, trying to regain the initial exhilaration that has gone missing. However, in a world of expanding debt, declining resources, and questionable sustainability, it seems imperative to arrest or minimize this process, so that people can learn to be content with less. Our study suggests that this is an attainable goal, realizable when people make efforts to be grateful for what they have and to continue to interact with it in diverse, surprising, and creative ways.

#### *Limitations and Future Research*

A limitation of our study is that our participants comprised only U. S. undergraduates. Although the HAP model is intended to apply to people of all ages and cultures, such generalizability needs to be established. For example, recent research suggests that positive emotions may be less important for happiness in Asian samples

(Leu, Wang, & Koo, in press). Thus, the strengths of the paths predicted by the HAP model, as well as the role of moderators, might differ across cultural groups. This issue needs to be examined by future investigators.

Another limitation concerns our study's relatively short duration (8 weeks). Although the HAP model was designed to apply across any time span, it may be that large and significant events (i.e., acquiring a new spouse, career, or address) have the best chance of having sustained long-term impact, to the extent that the person continues to appreciate those changes and experience them in varied and surprising ways. Finally, it would be valuable to replicate the current findings with relatively more objective measures of positive events and with non-self report measures of well-being. Do participants' friends and family corroborate that they remain happier after a positive life change, to the extent that the participants appreciate and vary their experiences of that change? Other outcomes besides well-being might also be examined in the context of the HAP model. For example, do declining positive emotions or raised aspirations over time predict decreased Duchene smiling, or increased spending, over the same time period?

### *Conclusion*

The "pursuit of happiness" is central to the U.S. worldview, yet the very expression also illustrates a paradox of that worldview: Perhaps when one pursues happiness too single-mindedly, one fails to notice and take advantage of what one already has. In other words, striving for ever greater happiness may set one on a hedonic treadmill to nowhere. The current study suggests a resource-maximization framework, in which happiness is best pursued by extracting the most possible from the present, before turning one's attention to the future. We suggest there may be an ideal balance between

present-oriented and forward-looking modes of living (Sheldon, Cummins, & Kamble, 2010), a balance that, if achieved, produces the highest level of well-being.

Table 1

*Descriptive Statistics for All Study Variables*

<u>Study Variables</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
T <sub>1</sub> Well-Being	4.83	1.51	.87
T <sub>2</sub> Well-Being	4.84	1.63	.89
T <sub>3</sub> Well-Being	4.95	1.70	.92
T <sub>2</sub> Positive Events	3.84	0.90	.77
T <sub>3</sub> Positive Events	3.21	1.21	.88
T <sub>2</sub> Positive Emotions	3.98	0.87	.85
T <sub>3</sub> Positive Emotions	3.56	1.06	.95
T <sub>2</sub> Aspirations	2.68	1.06	.68
T <sub>3</sub> Aspirations	2.79	1.06	.60
T <sub>2</sub> Appreciation	4.12	0.94	
T <sub>3</sub> Appreciation	3.51	1.28	
T <sub>2</sub> Variety	3.30	1.02	.86
T <sub>3</sub> Variety	3.03	1.05	.89

*Note.* No alpha coefficients are provided for the appreciation variables because these are single-item variables.

Table 2

*Correlations Among Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Sample													
2. T <sub>1</sub> WB	-.07												
3. T <sub>2</sub> WB	-.11	.66											
4. T <sub>3</sub> WB	-.15	.57	.64										
5. T <sub>2</sub> Pos Ev	-.06	.08	.14	.12									
6. T <sub>3</sub> Pos Ev	.12	.01	.09	.10	.30								
7. T <sub>2</sub> Pos Em	-.04	.19	.30	.24	.40	.21							
8. T <sub>3</sub> Pos Em	.02	.14	.22	.27	.21	.46	.32						
9. T <sub>2</sub> Aspire	-.10	-.10	-.11	-.08	.10	.06	.00	.03					
10. T <sub>3</sub> Aspire	.14	-.18	-.20	-.21	.06	.23	-.05	.04	.32				
11. T <sub>2</sub> Apprec	-.08	.19	.30	.26	.51	.31	.62	.26	-.04	-.07			
12. T <sub>3</sub> Apprec	.04	.09	.17	.22	.30	.62	.27	.70	.07	.02	.35		
13. T <sub>2</sub> Varied	.03	.02	.12	.12	.53	.25	.43	.22	.10	.13	.47	.26	
14. T <sub>3</sub> Varied	.13	.00	.08	.15	.27	.58	.22	.58	.11	.26	.24	.66	.41

*Note.*  $r_s > .08$  are significant at  $p < .05$ ;  $r_s > .12$  are significant at  $p < .01$ . Sample coded 0

= Spring, 1 = Fall. Pos Ev = positive events. Pos Em = positive emotions. Aspire =

aspirations. Apprec = appreciation. Varied = variety.

Table 3

*Testing Moderator Effects: Coefficients for the Product Interaction Terms*

	<u>Paths</u>		
	Events to Emotions	Events to Aspirations	Emotions to Well-Being
<u>Moderators</u>			
Variety	-.05	-.18**	.09*
Appreciation	.02	-.24**	.14**

*Note.* \*\* =  $p < .01$ , \* =  $p < .05$

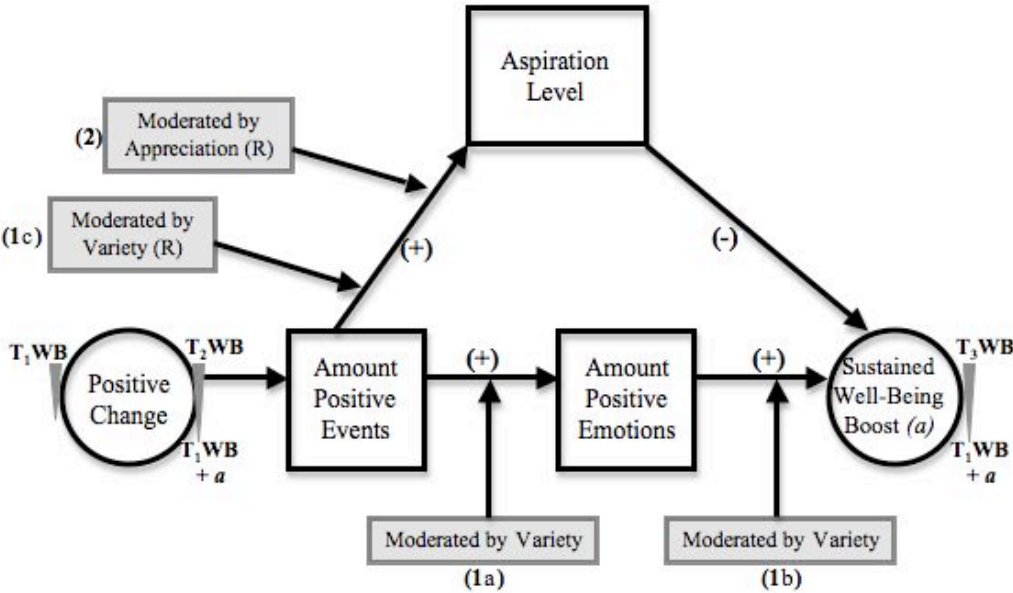


Figure 1. The Hedonic Adaptation Prevention (HAP) Model .

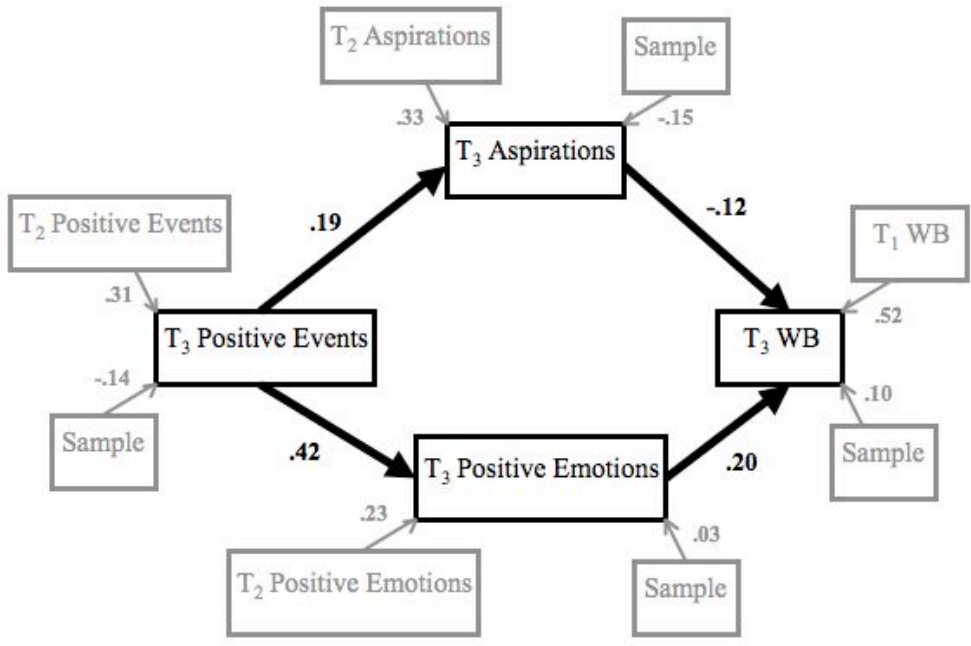


Figure 2. Path coefficients for the basic HAP model, including control variables and test-retest coefficients. All substantive coefficients significant at  $p < .05$ .

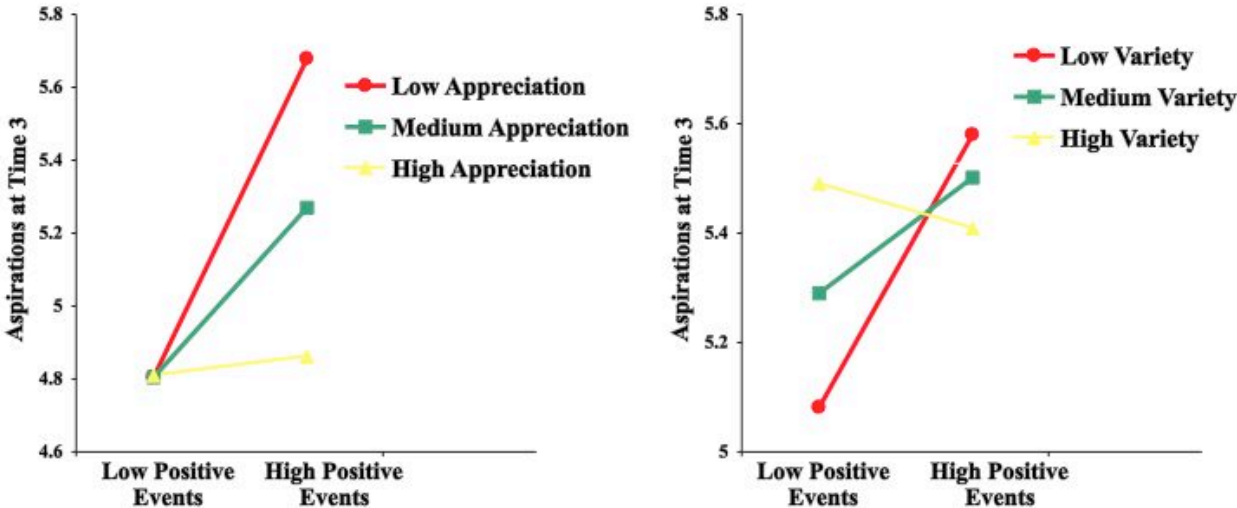


Figure 3. Predicting raised aspirations: Graphs of the Positive Events X Appreciation and Positive Events X Variety interactions.

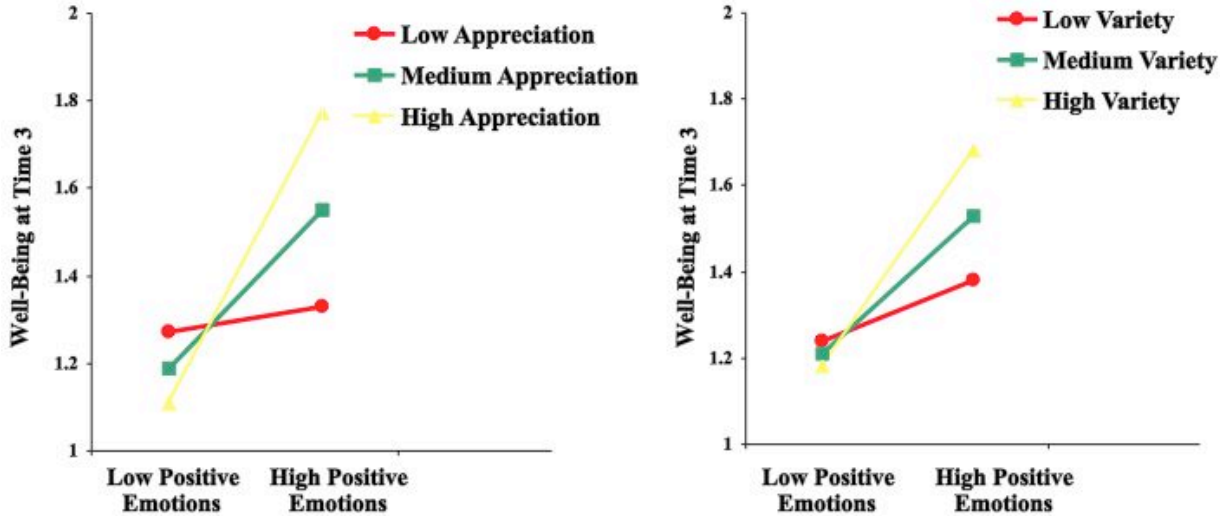


Figure 4. Predicting sustained well-being: Graphs of the Positive Emotions X Appreciation and Positive Emotions X Variety interactions.

## References

- Berlyne, D. E. (1970). Novelty, complexity, and hedonic value. *Perception & Psychophysics*, *8*, 279-286.
- Boehm, J. K., Lyubomirsky, S., & Sheldon, K. M. (in press). A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. *Cognition & Emotion*.
- Boswell, W. R., Boudreau, J. W., & Tichy, J. (2005). The relationship between employee job change and job satisfaction: The honeymoon-hangover effect. *Journal of Applied Psychology*, *90*, 882-892.
- Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, *36*, 917-927.
- Byrne, B. M. (2006). *Structural equation modeling with EQS: Basic concepts, applications, and programming* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Chancellor, J., & Lyubomirsky, S. (2011). Happiness and thrift: When (spending) less is (hedonically) more. *Journal of Consumer Psychology*, *21*, 131-138.
- Costa, P. T., McCrae, R. R., & Zonderman, A. B. (1987). Environmental and dispositional influences on well-being: Longitudinal follow-up of an American national sample. *British Journal of Psychology*, *78*, 299-306.
- Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research*, *31*, 103-157
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*, 276-302.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, *49*, 71-75.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist*, *61*, 305-314.

- Ebstein, R. B., Novick, O., Umansky, R., Priel, B., & Osher, Y. (1996). Dopamine D4 receptor (D4DR) exon III polymorphism associated with the human personality trait of novelty seeking. *Nature Genetics*, *12*, 78-80.
- Easterlin, R. A. (2006). Life cycle happiness and its sources: Intersections of psychology, economics, and demography. *Journal of Economic Psychology*, *27*, 463-482.
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, *84*, 377-389.
- Frederick, S., & Loewenstein, G. (1999). Hedonic adaptation. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 302-329). New York: Russell Sage Foundation.
- Headey, B., & Wearing, A. (1989). Personality, life events, and subjective well-being: Toward a dynamic equilibrium model. *Journal of Personality and Social Psychology*, *57*, 731-739.
- Helson, H. (1964). Current trends and issues in adaptation-level theory. *American Psychologist*, *19*, 26-38.
- Hu, L. & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55.
- Joreskog, K.G., & Sörbom, D. (2005). *Lisrel 8.80*. Lincolnwood, IL: Scientific Software International, Inc.
- Kahneman, D. (1999). Objective happiness. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology*. (pp. 3-25). New York: Russell Sage Foundation.
- Kahneman, D., & Thaler R.H. (2006). Anomalies: Utility maximization and experienced utility. *Journal of Economic Perspectives*, *20*, 221-234.

- Kashy, D. A., Donnellan, M. B., Ackerman, R. A., & Russell, D. W. (2009). Reporting and interpreting research in *PSPB*: Practices, principles, and pragmatics. *Personality and Social Psychology Bulletin*, *35*, 1131-1142.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2<sup>nd</sup> ed.). New York: Guilford Press.
- Koo, M., Algoe, S. B., Wilson, T. D., & Gilbert, D. T. (2008). It's a wonderful life: Mentally subtracting positive events improves people's affective states, contrary to their affective forecasts. *Journal of Personality and Social Psychology*, *95*, 1217-1224.
- Lane, R. E. (2000). *The loss of happiness in market democracies*. New Haven, CT: Yale University Press.
- Leu, J., Wang, J., & Koo, K. (in press). Are positive emotions just as "positive" across cultures? *Emotion*.
- Leventhal, A. M., Martin, R. L., Seals, R. W., Tapia, E., & Rehm, L. P. (2007). Investigating the dynamics of affect: Psychological mechanisms of affective habituation to pleasurable stimuli. *Motivation and Emotion*, *31*, 145-157.
- Lucas, R. E. (2005). Time does not heal all wounds: A longitudinal study of reaction and adaptation to divorce. *Psychological Science*, *16*, 945-950.
- Lucas, R. E. (2007a). Adaptation and the set point model of subjective well-being. *Current Directions in Psychological Science*, *16*, 75-79.
- Lucas, R. E. (2007b). Long-term disability has lasting effects on subjective well-being: Evidence from two nationally representative longitudinal studies. *Journal of Personality and Social Psychology*, *92*, 717-730.
- Lucas, R. E., & Clark, A. E. (2006). Do people really adapt to marriage? *Journal of Happiness Studies*, *7*, 405-426.

- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology, 84*, 527-539.
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science, 15*, 8-13.
- Lyubomirsky, S. (2008). *The how of happiness: A scientific approach to getting the life you want*. New York: Penguin.
- Lyubomirsky, S. (2011). Hedonic adaptation to positive and negative experiences (pp. 200-224). In S. Folkman (Ed.), *Oxford handbook of stress, health, and coping*. New York: Oxford University Press.
- Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: An experimental longitudinal intervention to boost well-being. *Emotion, 11*, 391-402.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*, 111-131.
- Parducci, A. (1995). *Happiness, pleasure, and judgment: The contextual theory and its applications*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Pronin, E., & Jacobs, E. (2008). Thought speed, mood, and the experience of mental motion. *Perspectives on Psychological Science, 3*, 461485-461485.
- Rolls, B., Rowe, E., Rolls, E., Kingston, B., Megson, A., & Gunary, R. (1981). Variety in a meal enhances food intake in man. *Physiology and Behavior, 26*, 215-221.
- Sheldon, K. M., Boehm, J., & Lyubomirsky, S. L. (in press). Variety is the spice of happiness: The hedonic adaptation prevention (HAP) model. In I. Boniwell & S. David (Eds.), *Oxford handbook of happiness*. Oxford, UK: Oxford University Press.

- Sheldon, K. M., Cummins, R., & Khamble, S. (2010). Life-balance and well-being: Testing a two-pronged conceptual and measurement approach. *Journal of Personality, 78*, 1093-1134
- Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology, 76*, 482-497.
- Sheldon, K. M., & Lyubomirsky, S. (2007). Is it possible to become happier? (And, if so, how?). *Social and Personality Psychology Compass, 1*, 129-145.
- Sheldon, K. M., & Lyubomirsky, S. (2009). Change your actions, not your circumstances: An experimental test of the Sustainable Happiness Model. In A. K. Dutt & B. Radcliff (Eds.), *Happiness, economics, and politics: Towards a multi-disciplinary approach* (pp. 324-342). Cheltenham, UK: Edward Elgar.
- Sheldon, K. M., & Lyubomirsky, S. (2006). Achieving sustainable gains in happiness: Change your actions, not your circumstances. *Journal of Happiness Studies, 7*, 55-86.
- Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology: In Session, 65*, 467-487.
- Suhara, T., Yasuno, F., Sudo, Y., Yamamoto, M., Inoue, M., Okubo, Y., & Suzuki, K. (2001). Dopamine D2 receptor in the insular cortex and the personality trait of novelty seeking. *NeuroImage, 13*, 891-895.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Wilson, T. D., Centerbar, D. B., Kermer, D. A., & Gilbert, D. T. (2005). The pleasures of uncertainty: Prolonging positive moods in ways people do not anticipate. *Journal of Personality and Social Psychology, 88*, 5-21.

- Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, vol. 35. (pp. 345-411). San Diego, CA: Elsevier Academic Press.
- Wilson, T. D., & Gilbert, D. T. (2005). Affective forecasting: Knowing what to want. *Current Directions in Psychological Science*, 14, 131-134.
- Wilson, T. D., & Gilbert, D. T. (2008). Explaining away: A model of affective adaptation. *Perspectives on Psychological Science*, 3, 370-386.

Author Notes

Kennon Sheldon, Department of Psychological Sciences, University of Missouri, Columbia. Sonja Lyubomirsky, Department of Psychology, University of California, Riverside.

Correspondence concerning this article should be addressed to Kennon Sheldon, [sheldonk@missouri.edu](mailto:sheldonk@missouri.edu), 573-884-1547.

Footnotes

<sup>1</sup>For these reasons, we omitted from this report analyses of gratitude and savoring, which were also measured in our study. Notably, however, these constructs loaded on a single factor along with the appreciation item.