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Easy to Retrieve but Hard to Believe: Metacognitive Discounting of the Unpleasantly Possible

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Abstract

People who recall or forecast many pleasant moments should perceive themselves as happier in the past or future than people who generate few such moments; the same principle should apply to generating unpleasant moments and perceiving unhappiness. Five studies suggest that this is not always true. Rather, people's metacognitive experience of ease of thought retrieval ("fluency") can affect perceived well-being over time beyond actual thought content. The easier it is to recall positive past experiences, the happier people think they were at the time; likewise, the easier it is to recall negative past experiences, the unhappier people think they were. But this is not the case for predicting the future. Although people who easily generate positive forecasts predict more future happiness, people who easily generate negative forecasts do not infer future unhappiness. Given pervasive tendencies to underestimate the likelihood of experiencing negative events, people apparently discount hard-to-believe metacognitive feelings (e.g., easily imagined unpleasant futures). Paradoxically, people's well-being may be maximized when they contemplate some bad moments or just a few good moments.

Keywords

mental time travel, metacognition, expectations, valence, well-being, judgment, life satisfaction, happiness, heuristics

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How happy were you last year? How much happiness might next year bring? Such questions invite people to recall or imagine events in their lives that contain joy and pleasure, sorrow and sadness. Traditional theories of evaluative judgment (e.g., Higgins, 1996; Wyer & Srull, 1989) assume that people who generate many thoughts of positive events should feel happier than people who generate few, and people who generate many thoughts of negative events should feel unhappier than people who generate few. However, thinking about positive and negative events involves not only the content of one's thoughts but also the phenomenological experience of bringing them to mind—in particular, how easily thoughts are processed and retrieved. Accordingly, people's metacognitive experience of ease of thought retrieval ("fluency") may lead them to perceive more or less happiness when pleasant or unpleasant moments feel easier or harder, respectively, to think about (see Alter & Oppenheimer, 2009; Schwarz, 2004; Tversky & Kahneman, 1973; Winkielman & Schwarz, 2001). For example, a person who easily remembers negative events that occurred in the previous year could infer that he or she must not have been very happy after all—even if, paradoxically, only a few unpleasant memories are recalled.

At the same time, although the past tends to be affectively mixed such that both good and bad events can be easily brought to mind (Newby-Clark & Ross, 2003), expectations about the future tend to be far less diluted by negative thoughts. Most people are consistently optimistic that things will go right in their futures and that tomorrow promises greener pastures and sunnier circumstances (e.g., see Schacter & Addis, 2007; Sharot, 2012; Weinstein, 1980). In its extreme form, this bias can lead

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people to hold problematic misperceptions of their own skill and status (Moore & Healy, 2008). In general, however, people's natural tendencies to assume positive, desirable, and successful outcomes can prove quite useful for navigating everyday life—whether by helping them literally get out of bed in the morning ("Today will be a safe commute to the office") or by inspiring them toward broader goals ("My effort will pay off down the road").

Therefore, it is perhaps unsurprising that perceptions of the future tend to be dominated by pleasant (rather than unpleasant) expectations; people's normative orientation is to assume positive outcomes unless they find reason to believe otherwise (e.g., Chambers & Windschitl, 2004; Lench & Ditto, 2008; Taylor & Brown, 1988). This view was confirmed in two pilot surveys. In the first survey, 50 online[1] participants (40% women, 60% men; mean age = 34.36 years) were asked to rate what percentage of their thoughts on an average day contain positive, negative, and neutral content. As predicted, participants thought far more frequently about positive content (M = 43.80%) than about negative content (M = 27.02%) or neutral content (M = 29.18%). Moreover, when asked to explicitly describe their future-oriented thoughts by choosing whether they tend to "assume most things will go right" or "assume most things will go wrong" in their lives, a majority (74%) believed that their futures would go well.

A second survey expanded on this observation by asking a new sample of 50 participants (30% women, 70% men; mean age = 27.50 years) to specifically forecast whether their lives in the next year would contain (a) only positive events, (b) mostly positive events and some negative events, (c) equal occurrences of positive and negative events, (d) mostly negative events and some positive events, or (e) only negative events. As expected, most (60%) believed they would experience mostly positive and some negative events. In a similar vein, when these participants were asked to choose whether they were more focused on "attaining happy moments" or "avoiding unhappy moments" in the next year, most (88%) chose the former. Together, these pilot data confirm that people tend to think about their future lives in positive terms: Most people expect things to go well (not poorly) and believe that tomorrow promises many more happy experiences than unhappy experiences.

Thus, despite having experienced both good and bad moments in the past, people assume that their emotional futures will be good. In terms of fluency, this distinction suggests that although recalling both happy and sad past events might be susceptible to metacognitive assimilation, an interesting valence-specific departure could emerge for future events once people's initial assumptions are met with conflicting metacognitive cues. Namely, people's expectations of a positive future should be susceptible to fluency, but the effect of fluency may be eliminated when people think about negative futures. Indeed, people who struggle to generate positive forecasts may find reason to feel that their future will be negative. Because people are accustomed to thinking about the future in positive terms and tend to expect that many good events will occur, the salient act of trying and failing to generate thoughts of pleasant possibilities might seem like a sign that something is wrong. Accordingly, people could infer future unhappiness in line with fluency effects. By the same logic, however, easily imagining negative events need not sound the alarm—after all, most people rarely think about the future in negative terms, and they expect that negative outcomes are highly unlikely. Hence, generated images of an unhappy future could seem undiagnostic or uninformative about more "realistic" future states. In line with this view, people may discount their metacognitive experience: They may be no more likely to infer future unhappiness when unpleasant futures feel easy to think about than when they are difficult to bring to mind.[2]

In five studies, these possibilities were tested by asking participants to generate thoughts of happy or unhappy events from the preceding or upcoming year. The ease with which these thoughts were retrieved was then compared with participants' global assessments of well-being. On the basis of previous findings, it was predicted that fluency would indeed influence people's perceptions of happy pasts, happy futures, and unhappy pasts; however, the effect of fluency might be eliminated when people imagine unhappy futures.

Studies 1 and 2: Fluency Over Time

In Studies 1 and 2, the effects of fluency on perceptions of past and future well-being were examined using correlational (Study 1) and experimental (Study 2) designs.

Study 1

Method. In a 2 (time: past or future) × 2 (valence: happy or unhappy) between-subjects design, 389 online participants (72% women, 28% men; mean age = 33.31 years) were asked to generate lists of eight personal experiences from the past year or the next year[3] that made or would make them happy or unhappy. Then, they rated separately how difficult their thoughts of the experiences were to generate and how happy they were (or would be) overall (1 = *not at all*, 10 = *very*).[4]

Results and discussion. Consistent with standard fluency effects, results showed that the easier it was to generate positive past experiences, the happier people thought they used to be, $r = -.49$, $p < .001$; similarly, the

easier it was to generate negative past experiences, the unhappier people thought they used to be, $r = .36$, $p = .001$. But this was not the case for future events, and this marked the critical departure. As expected, the easier it was to generate positive future experiences, the happier people thought they would be, $r = -.26$, $p = .009$. However, there was no relationship between easily imagining negative futures and overall judgments of future emotional states, $r = -.07$, $p = .52$.

These findings support the hypothesis. Global perceptions of past and future happiness were strongly related to the ease of retrieving thoughts of both good and bad events—except when people tried to imagine unhappy futures. Study 2 replicated these patterns in a fully randomized experiment in which fluency was manipulated (adapted from Schwarz et al., 1991).

Study 2

Method. In a 2 (time: past or future) × 2 (valence: happy or unhappy) × 2 (fluency: easy or difficult) between-subjects design, 180 online participants (54% women, 46% men; mean age = 32.97 years) were asked to generate lists of either 3 (easy task) or 12 (difficult task) happy or unhappy personal experiences from the past year or the next year. Participants then answered the questions from Study 1.

Results and discussion. Validating the fluency manipulation, it was harder to generate 12 experiences ($M = 6.14$) than 3 experiences ($M = 3.52$), $p < .001$.[5] Global assessments were qualified by the predicted three-way interaction, $F(1, 179) = 3.96$, $p = .048$ (see Fig. 1). Paradoxically, people who recalled only 3 positive past events remembered being happier ($M = 7.79$, $SD = 1.25$) than did people who recalled 12 positive past events ($M = 6.33$, $SD = 2.26$), $p = .009$, but people who recalled 12 negative past events remembered being happier ($M = 7.44$, $SD = 1.50$) than people who recalled only 3 negative past events ($M = 5.91$, $SD = 1.98$), $p = .01$. Moreover, the same departure emerged: Although listing 3 positive future events led people to predict being happier ($M = 8.13$, $SD = .85$) than listing 12 did ($M = 7.20$, $SD = 1.40$), $p = .01$, people predicted equal future happiness whether they listed 3 negative future events ($M = 7.11$, $SD = 1.85$) or 12 negative future events ($M = 7.13$, $SD = 2.11$), $p = .97$. These findings replicate those of Study 1 with a fully randomized design.

Studies 3, 4, and 5: Discounting Future Unhappiness

Studies 1 and 2 established the general effects of fluency on people's perceptions of well-being in the past year and next year. The next studies were designed to further

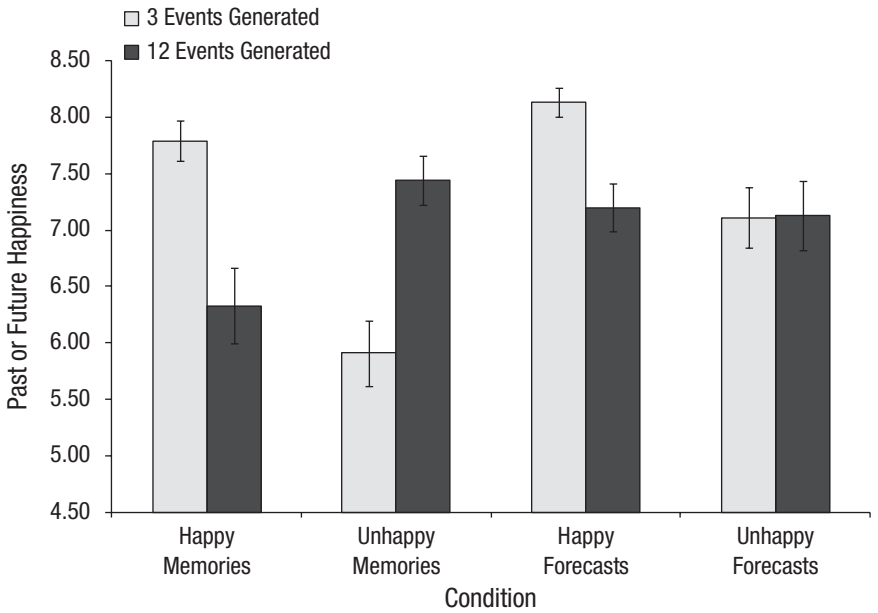

Fig. 1. Results of Study 2: mean ratings of past or future happiness as a function of condition and the number of events that participants were asked to generate. Conditions were defined by whether participants were instructed to remember or predict happy or unhappy events. Error bars indicate ±1 *SE*.

distinguish fluency's unique null effect on predictions of future unhappiness. First, does the departure remain when more diverse measures of well-being are examined (Study 3)? Second, given the well-established connection between traditional optimism biases and motivated reasoning, might the departure contain a motivational component (Study 4)? Third, is the effect of fluency indeed mediated by people's expectations of how likely good and bad events are to actually occur (Study 5)?

Study 3: scales

Studies 1 and 2 were restricted to a single-item measure of happiness, but many studies of well-being have employed multidimensional measures. Study 3 sought to address this limitation.

Method. In a between-subjects correlational design, 51 online participants (61% women, 39% men; mean age = 29.24 years) were asked to generate lists of eight happy or eight unhappy personal experiences that might occur in the next year. All participants rated how difficult the lists were to generate (1 = *not at all*, 10 = *very*) and then completed two well-being scales. First, they completed the five future-related items from the well-established Temporal Satisfaction With Life Scale, or TSWLS (e.g., "The conditions of my life next year will be excellent"; Pavot, Diener, & Suh, 1998), which were rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Second, participants completed five global assessments of future well-being: how happy they will be next year, how satisfied they will be next year, how much they will enjoy next year, how much fun they will have next year, and how positive they will feel next year. These items were rated on a scale from 1 (*not at all*) to 10 (*very*).

Results and discussion. TSWLS items were collapsed into a composite index of prospective satisfaction (α = .89), and global items were collapsed into a composite index of prospective happiness (α = .97). As expected, the easier it was to generate positive future experiences, the more satisfied (r = −.42, p = .028) and happier (r = −.51, p = .006) participants thought they would be. However, as in Studies 1 and 2, there was no relationship between being able to easily imagine negative futures and overall satisfaction (r = .14, p = .50) or overall happiness (r = .12, p = .59). These results extend the prior patterns beyond a single-item well-being measure.

Study 4: friends

As outlined in the introduction, most people expect their futures to contain many more happy moments than unhappy moments. A large literature suggests that such optimistic perceptions stem (at least partly) from motivated reasoning: People are biased to expect mostly good outcomes as a means to enhance mood, maintain self-esteem, and impel behavior (see Kunda, 1990; Sharot, 2012; Taylor & Brown, 1988). Accordingly, research has shown that people believe that their own futures will be bright but do not necessarily believe that other people's futures will be (for a review, see Chambers & Windschitl, 2004). In other words, although Studies 1, 2, and 3 suggest that people discount negative futures for themselves, people who can easily imagine negative futures for other people may still be affected by fluency if, as presumed, the departure has roots in these well-established optimistic expectations. This possibility was tested in Study 4.

Method. In a between-subjects correlational design, 80 online participants (49% women, 51% men; mean age = 31.45 years) completed a survey about how people think about their friends' futures. On the opening screen, they were asked to indicate the name of a close friend about whom they knew a lot, which restricted their judgments to friends who were highly familiar (people are affected by fluency differently when thinking about familiar than about unfamiliar targets; Caruso, 2008). Next, participants were asked to list eight experiences that might make their friend happy or unhappy during the upcoming year. All participants rated how difficult the thoughts were to generate (1 = *not at all*, 10 = *very*). Then, they completed adapted versions of the measures used in Study 3: the TSWLS (e.g., "The conditions of my friend's life next year will be excellent"; α = .82) and the five-item well-being scale (e.g., "How happy will your friend be next year?"; α = .96).

Results and discussion. Again, the easier it was to generate thoughts of positive future experiences for their friend, the more satisfied (r = −.28, p = .069) and happier (r = −.35, p = .021) people thought their friend would be. However, unlike the patterns found in the previous studies, this pattern remained for negative forecasts: The easier it was to generate thoughts of negative future experiences for their friend, the less satisfied (r = .38, p = .022) and less happy (r = .36, p = .03) people thought their friend would be. This finding is important for integrating the results of Studies 1, 2, and 3 into traditional accounts of optimism bias. The act of imagining negative events itself cannot account for the null effect of fluency; rather, the target of negative forecasts predicts whether fluency has an effect (as when negative thoughts are generated about the futures of other people) or whether it is discounted (as when individuals generate negative thoughts about their own futures). Thus, Study 4 corroborates the claim that this departure (at least partly) depends on people's preexisting, motivated expectations

about their own futures. In the next study, we sought to establish direct evidence for the process of discounting negative thoughts about the future even when such thoughts are easily generated.

Study 5: vacations

A final question pertains to specific reasons why people discount feelings of fluency when generating negative forecasts but not when generating positive ones. As proposed, the departure should depend on people's expectations that good events are much more likely to happen to them than bad events. Because people expect many happy events to occur, the salient act of struggling to imagine happy moments may decrease the perceived likelihood that happy moments will occur, which would lead to lower predicted happiness overall. In contrast, being able to easily imagine unhappy events need not be alarming if the events are nevertheless assumed to be highly unlikely. Study 5 explored whether perceived likelihood indeed mediates the effect of fluency on global perceptions of future happiness.

Method. In a 2 (valence: positive or negative) × 2 (fluency: easy or difficult) between-subjects design, 196 online participants were invited to take a survey about their upcoming summer vacations. On the opening screen, 25 subjects admitted that they had no vacation plans and were removed. Thus, the final sample comprised 171 future vacationers (46% women, 64% men; mean age = 29.43 years). Depending on condition, participants generated 3 or 12 "positive things that could go right" or 3 or 12 "negative things that could go wrong" on their trip. As a manipulation check, we asked participants to indicate whether this list was "generally difficult" or "generally easy" to create (people with inconsistent responses were eliminated for a more stringent test of the hypothesis). For dependent measures, participants completed the five-item global well-being scale from Studies 3 and 4, modified to apply to their vacation plans (e.g., "How happy will you be on this vacation?"; $\alpha = .96$); scores ranged from 1 (*not at all*) to 10 (*very*). Participants were also asked, "What are the chances that many things will go right on this vacation?" Scores on this question ranged from 0% to 100%.

Results and discussion. Prospective happiness was qualified by the predicted interaction, $F(1, 117) = 4.51$, $p = .036$. People who listed only 3 positive events predicted being happier on the trip ($M = 8.95$, $SD = 1.28$) than people who listed 12 positive events ($M = 8.20$, $SD = 1.14$), $p = .034$; similarly, participants believed that the chance that many things would go right on the vacation seemed lower after listing 12 positive events ($M = 73.76\%$, $SD = 14.60\%$) than after listing 3 positive events ($M = 84.54\%$, $SD = 11.77\%$), $p = .008$. In turn, perceptions of the chance of good events actually occurring on vacation fully mediated the effect of fluency on forecasted well-being during the trip (95% bootstrap confidence interval = [–1.42, –0.22], which excludes 0; see Fig. 2). In contrast, people expected equal happiness on their vacation whether they listed 3 negative events ($M = 8.75$, $SD = 1.23$) or 12 negative events ($M = 9.02$, $SD = 1.11$), $p = .42$. Accordingly, bad vacation experiences seemed just as unlikely after participants listed 3 negative events ($M = 22.14\%$, $SD = 16.08\%$) as after they listed 12 negative events ($M = 16.50\%$, $SD = 12.85\%$), $p = .14$. Thus, the discounting effect may be explained by a difference in the perception of good and bad events actually occurring.[6]

General Discussion

The findings reported here appear to be clear in cause and potentially rich in consequence. First, how happy people think they were or will be is strongly shaped by incidental metacognitive cues. Paradoxically, happiness is maximized when people generate only a few pleasant memories or forecasts rather than many, because greater struggling to generate thoughts of positive moments leads people to infer less positive lives. This observation is critical for marketers, policy makers, and everyday people, who often endorse opposite strategies for enhancing well-being (e.g., promoting the belief that more happiness in quantity yields more happiness in quality; see Oishi, Diener, & Lucas, 2007).

Second, this fluency effect is eliminated when people generate negative thoughts about their future, because people expect that few negative experiences are just as unlikely to occur as many. This finding reveals important boundaries to the axiom that fluently processed information represents "real" information—that thoughts

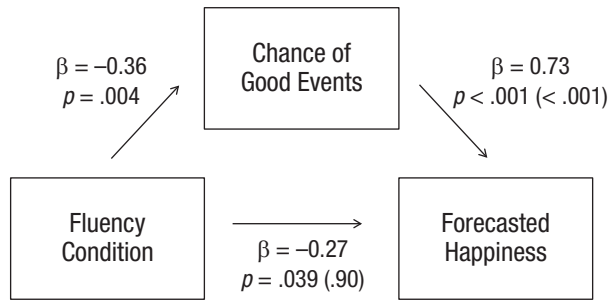

Fig. 2. Results of Study 5: multiple regression mediation model (Baron & Kenny, 1986) showing the influence of fluency condition (easy or difficult) on forecasted happiness on vacation, as influenced by perceptions of how likely it was that good events would occur. The *p*s in parentheses show the strength of the path between two variables when the third variable is controlled for.

that easily come to mind are perceived as believable, accurate, and true (Alter & Oppenheimer, 2009; Begg, Anas, & Farinacci, 1992; Brennan & Williams, 1995; Dechêne, Stahl, Hansen, & Wänke, 2010; Hilbig, 2012; Kelley & Lindsay, 1993; McGlone & Tofighbakhsh, 2000; Reber & Schwarz, 1999). People who easily generated thoughts of negative future experiences were no more inclined to believe that they would be unhappy, consistently expecting the same pleasant tomorrow, as people who struggled to imagine negative future experiences. Thus, metacognitive states themselves can apparently feel wrong and not be brought to bear on subsequent judgments and perceptions. These results indicate that people may tune out their metacognitive voices depending on the valence and content of their thoughts, preexisting expectations, beliefs, and motives.

Theoretical extensions

The previous observation complements and extends earlier research showing that people are less influenced by fluency when they think about other people who are unfamiliar to them, presumably because people infer that their own fluency or lack of fluency reflects a dearth of knowledge about the other person, rather than something meaningful (Caruso, 2008). Generally speaking, people might not be influenced by metacognitive feelings that are perceived to be undiagnostic about the content domain. This tendency may help explain why fluency seems to lose its power when people think about unfamiliar targets and when the thinking experience itself feels unfamiliar or unnatural (as when people try to generate negative forecasts or imagine negative futures, which contradicts the normative orientation to think about positive possibilities). Paradoxically, generating downsides of an upcoming positive event could yield just as much excitement as generating some upsides—and more excitement than imagining many upsides.

This valence-specific asymmetry reveals novel and nuanced phenomenology underlying how people think about the future. The experience of easily imagining negative futures could have led people to increase their estimates of the likelihood of bad events and thus infer future unhappiness in line with standard fluency effects. But this was not the case. Rather, the effect of ease of retrieval was apparently not powerful enough to nudge participants away from their preexisting expectations. These findings are consistent with those of many prior studies that attempted to change people's persistently optimistic belief that they are unlikely to personally experience negative events (see Moore & Healy, 2008, for a review).

The very nature of such optimism biases may present a double-edged sword. On the one hand, people expect that bad experiences are highly unlikely, which helps them stay hopeful in the face of unpleasant prospects. Moreover, even when faced with highly probable negative events, people still might be comforted by their perception that most future events will nonetheless be positive. On the other hand, precisely because people expect good experiences to occur, a lack of pleasant prospects can feel unfair and be discouraging. Paradoxically, then, the same beliefs and expectations that lead people to initially assume brighter tomorrows can buffer thoughts about unhappy future experiences but can be a curse when they struggle to think about happy future experiences.

Future directions

This valence-driven distinction in future-oriented thinking may lead to important differential consequences. One avenue for follow-up research might be to explore people's reliance or nonreliance on metacognitive cues as they generate different types of thought content. Thoughts about the hypothetical future are often just as constrained by reality as thoughts about the actual past (see Johnson & Sherman, 1990; Ross & Buehler, 2004). In these situations, one could expect similar patterns as the current studies. However, it seems less intuitive to rely on metacognitive cues to guide thoughts and expectations about a potentially infinite variety of future experiences; although "next year" and "next vacation" are relatively defined and realistic future experiences, a person who can easily daydream about hitting game-winning home runs should not infer that he or she has a better chance of playing professional baseball for the Philadelphia Phillies than someone who struggles to imagine hitting home runs. Nonetheless, the fact that participants in the "happy future" conditions were sensitive to metacognitive cues suggests that people can be influenced by fluency not only when thinking about literal content, but also when thinking about more hypothetical content.

A related avenue of research could be followed to extend these principles beyond the temporal domain (e.g., Oppenheimer, 2004). If people tend to not believe that negative events will happen to them in the future, then other similarly hard-to-believe thoughts might also be discounted. For example, people might tend to maintain their original opinions even if unfavorable reviews of a desired product or unwelcome news stories about a preferred political candidate come easily to mind. Future work should explore this possibility and its problematic implications. Indeed, a sense of ease in generating thoughts about some situations probably should signal a need to reexamine opinions, choices, or judgments, particularly in the case of easily imagined potential problems (e.g., easily generated thoughts about future negative experiences).

Conclusion

The current studies help expose some of the phenomenological foundations underlying people's potentially misguided thought processes and misperceptions of well-being in everyday life, and thus suggest important topics for research. In doing so, they shed light on and raise new questions about how people perceive their well-being over time. More broadly, they reveal the need for a better understanding of when otherwise strong subjective experiences do not influence judgment—perhaps when more pleasant beliefs and biases prove more satisfying.

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Notes

1. All samples reported in this article were recruited via Amazon's Mechanical Turk.
2. These processes likely differ across less normative samples. For example, people who regularly think about negative experiences—such as certain clinical groups, chronic worriers, or avoidance-focused personality types—might bring their metacognitive feelings to bear if they perceive them as diagnostic of everyday thinking.
3. All studies were conducted near the middle of the calendar year, thus accounting for the possibility that "last year" was simply at a farther or closer distance than "next year."
4. After each study, blind independent samples rated how serious and how positive or negative each response was, and the amount of variety in each list; adding these ratings to the analysis had no effect on the results.
5. In addition to this main effect of fluency, there was a main effect of valence such that participants had more difficulty generating negative events ($M = 5.39$) than generating positive events ($M = 4.27$), $p = .003$. This finding is consistent with findings of prior work (e.g., Newby-Clark & Ross, 2003). There was no main effect of the time variable ($p = .15$). More important, there were no interactions between difficulty and any of these conditions (all ps $> .10$).
6. Participants also provided logistical information about their vacations (e.g., type of destination, length of stay, date of travel, amount of disposable income, travel partners); including this information in the analysis had no effect on the findings.

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