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# What to Do on Spring Break? The Role of Predicted, On-line, and Remembered Experience in Future Choice

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# WHAT TO DO ON SPRING BREAK?

## The Role of Predicted, On-Line, and Remembered Experience in Future Choice

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Abstract—When individuals choose future activities on the basis of their past experiences, what guides those choices? The present study compared students' predicted, on-line, and remembered spring-break experiences, as well as the influence of these factors on students' desire to take a similar vacation in the future. Predicted and remembered experiences were both more positive—and, paradoxically, more negative— than on-line experiences. Of key importance, path analyses revealed that remembered experience, but neither on-line nor anticipated experience, directly predicted the desire to repeat the experience. These results suggest that although on-line measures may be superior to retrospective measures for approximating objective experience, retrospective measures may be superior for predicting choice.

How does experience influence choice? The psychological principle of reinforcement posits an automatic association between experience and behavior. That is, people repeat experiences that they enjoy and avoid those that they do not. But do people know how much they have enjoyed past experiences? Research has shown people's memory of events is often inconsistent with their self-reported moment-by-moment experience during those events. In one study, cyclists were surveyed before, during, and after a 3-week bicycle tour of California. Despite the fact that the on-line accounts were filled with tales of excessive rain, unamusing companions, and physical exhaustion, the retrospective accounts were considerably rosier (Mitchell, Thompson, Peterson, & Cronk, 1997). Similar discrepancies have been observed among vacationers to Europe and Disneyland, and even runners in the Chicago Marathon (Mitchell et al., 1997; Sutton, 1992; Wirtz & Kruger, 2002).

Nowhere is the inconsistency between on-line and retrospective experience more apparent than in work on the "peak-and-end" effect (Fredrickson & Kahneman, 1993; Kahneman, Fredrickson, Schreiber, & Redelmeier; 1993; Redelmeier & Kahneman, 1996; see Fredrickson, 2000, for a review). In a series of studies, these researchers demonstrated that retrospective accounts of affect are influenced primarily by the peak and final moment of on-line experience—with little regard to the duration, mean, or sum of that experience. Such studies have led some researchers to question the validity of retrospective measures of experience. Kahneman (1999) argued that retrospective reports are a "fallible estimate" of actual experience (p. 4), which can be assessed only by measuring an individual's moment-by-moment, on-line thoughts and feelings throughout the duration of an experience.

Still, there remain important reasons to pay attention to retrospective experience, as Kahneman (2000) realized. Whereas on-line reports may be a better measure of "objective" experience, retrospective measures may better predict something equally important: future behavior. Whether considering a trip to Disneyland, a reunion with an old flame, or a move to the city, individuals base their decisions, at least in part, on their previous experiences. When

on-line and remembered experience conflict, as they frequently do, we suspect that it is remembered experience, not on-line experience, that best predicts choice. This hypothesis is consistent with the results of Kahneman et al. (1993), who found that participants undergoing an ice-submersion task were more willing to repeat the trial they remembered as being less painful than to repeat the trial the on-line measures suggested was less painful—even after researchers explained the difference between the two (Kahneman, 2000).

Although these data are suggestive, they involve relatively confined and short-term laboratory paradigms. It remains to be seen whether similar results would be found in a long-term, ecological setting. In the present study, we tracked a sample of college students before, during, and after their spring-break vacations, then compared online and remembered experience as predictors of participants' desire to repeat the experience. In addition to measuring on-line and remembered experience, we measured predicted experience. An intriguing hypothesis offered by past researchers is that predicted experience, in addition to on-line experience, shapes memories of events (Klaaren, Hodges, & Wilson, 1994; Mitchell et al., 1997; Sutton, 1992). To see why, consider vacations. Beforehand, a person might envision relaxing on a sunny beach or camping in an idyllic forest. But things do not always go as planned, and getting burned by the sun or bitten by insects is rarely something vacationers envisioned. However, after a vacation has ended, there is some evidence to suggest that the vacationer forgets the disappointments (Mitchell et al., 1997) and reinterprets vacation memories in ways consistent with original expectations (Klaaren et al., 1994). Or, as humorist Dave Barry (1991) cynically observed, "the human race is far too stupid to be deterred from tourism by a mere several million years of bad experiences" (p. 3). By measuring predictions, we could test their role not only in remembered experience, but also in participants' desire to repeat the experience.

## METHOD

Forty-six paid participants took part in the study. Two were excluded from the analyses because they failed to complete all of the dependent measures, 2 were excluded because their personal data assistants (PDAs) malfunctioned during break, and 1 was excluded because his PDA wound up on his list of "things not to forget to take to London next time." This left a total of 41 students (21 women, 20 men), ages 17 to 26 ($M = 21$). The ethnic makeup of the sample was Asian ($n = 22$), Caucasian ($n = 16$), and Hispanic ($n = 2$); 1 individual did not report ethnicity. The most popular destinations were Florida ($n = 6$), Europe ($n = 5$), and Kentucky ($n = 5$). Most participants had not previously visited their destination ($n = 31$), most travelled with friends ($n = 34$), and vacations lasted from 4 to 11 days ($M = 8$).

Participants were surveyed at six points over the course of about 8 weeks. Approximately 2 weeks prior to the beginning of spring break, participants predicted their experience on a questionnaire administered via e-mail. The questionnaire was designed to capture three separate but related criteria: positive affect, negative affect, and overall subjective experience. Specifically, participants predicted the intensity with which they would feel five positive emotions (sociable, happy, calm, pleasant, and joyful) and five negative emotions (irritated, guilty, sad, worried, and unpleasant), each on a scale from 0 (*not at all*) to 6 (*maximum intensity*; adapted from Thomas & Diener, 1990). Also, on a scale ranging from 1 (*disagree*) to 5 (*agree*), participants endorsed three statements designed to capture their anticipated overall subjective experience: "I expect to enjoy spring break," "I think this break will be

fun," and "I will be satisfied with this vacation" (adapted from Mitchell et al., 1997, and Klaaren et al., 1994).

Participants made a second set of identical predictions approximately 2 to 4 days prior to spring break, when picking up their PDAs. The PDA, they were told, would "beep" several times each day during a 13-hr period (9 a.m. to 10 p.m., or 11 a.m. to midnight), and each time it did they were to complete a short computerized survey. Participants were allowed to choose an early ($n$ = 19) or late ($n$ = 16) schedule; 6 participants carried PDAs requiring them to initiate the 13-hr sampling period themselves, upon waking.

The PDAs were preprogrammed to survey participants at seven randomly selected intervals per day for the entire duration of the break. Each survey included the same 13 questions participants were asked prior to the vacation, except that verb tense was changed from future to present tense (e.g., "I will be satisfied with this vacation" became "I am satisfied with this break").

Approximately 2 to 4 days after spring break, participants returned the PDAs and completed the first of two retrospective questionnaires. The first questionnaire called for participants to recall their enjoyment over spring break, using the same three items as before, with the verb tense changed (e.g., "I was satisfied with this vacation"). The second and final retrospective questionnaire included the same questions but was completed via e-mail approximately 4 weeks after spring break. Finally, participants returned to the lab approximately 5 weeks after spring break—8 weeks after the study began—to collect payment. At this time, they responded to a dependent measure representing choice, operationalized as their desire to repeat the experience. In particular, participants were asked, "Would you take this same vacation over again (assuming you hadn't just been there, but that you know what you now know)?" Responses were made on a scale from 1 (*definitely no*) to 4 (*neutral*) to 7 (*definitely yes*).

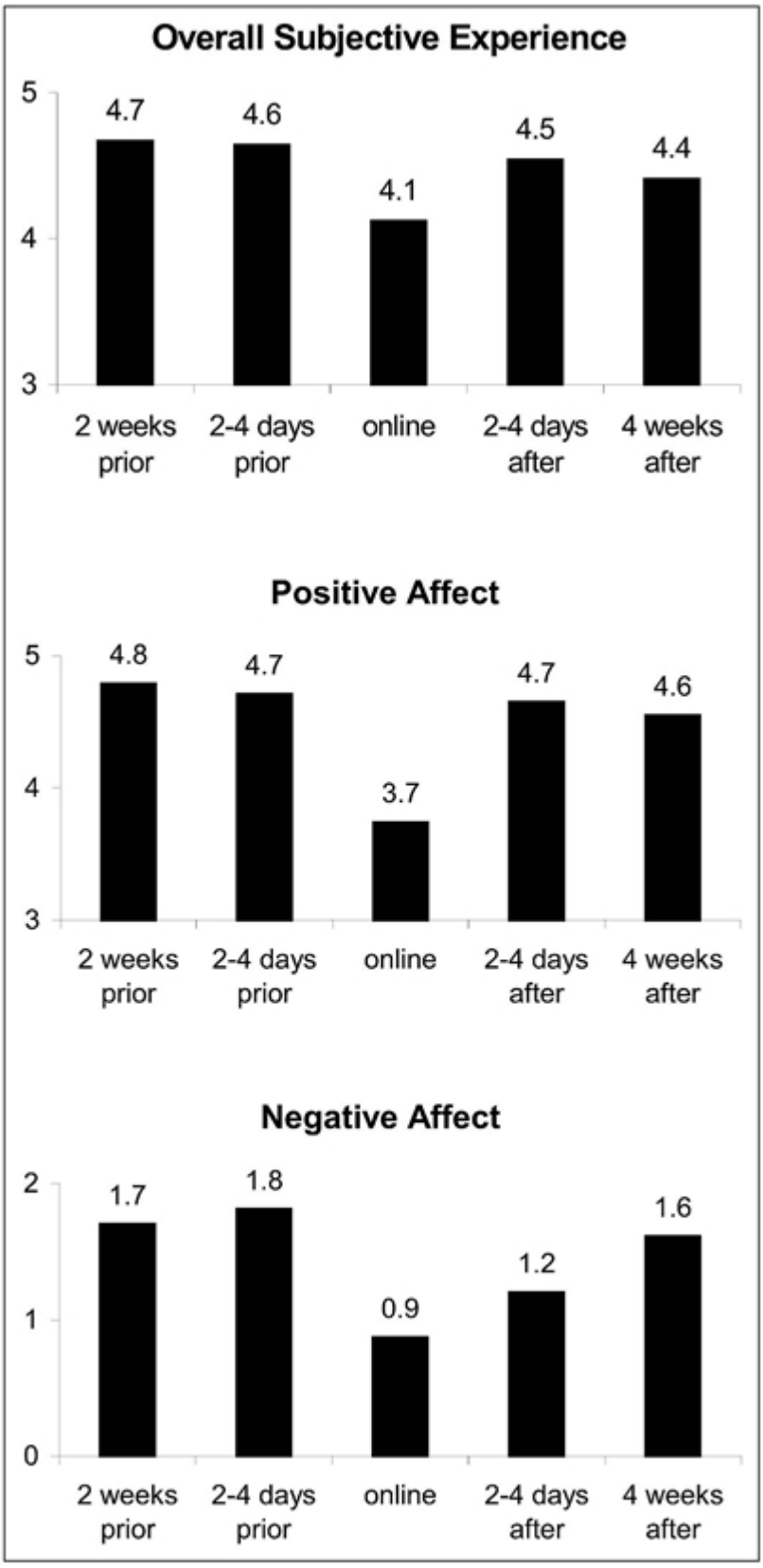


**Fig. 1.** Predicted, on-line, and remembered spring-break experience, measured at five different times. Higher ratings indicate greater enjoyment of the overall subjective experience and more intense positive and negative affect.

## RESULTS

Responses to the five positive-affect measures were highly interrelated at each time period (mean α = .79), as were the five negative-affect measures (mean α = .79), and the three overall-subjective-experience measures (mean α = .88). Thus, we averaged these measures to create three separate indices (positive affect, negative affect, and overall subjective experience) for each of the five time periods. The on-line measures were computed by taking a participant's average response across the duration of the break, beginning with the first response the day the student left and ending with the last response on the day he or she returned.

Our first set of analyses focused on the mean levels of predicted, on-line, and remembered experience. Responses to the overall-subjective- experience and positive-affect questions revealed a clear rosy view: Participants' predicted and remembered experiences were more favorable than their mean on-line evaluations (Fig. 1). Separate pairwise comparisons revealed that the on-line measures were significantly significantly lower than the measures at all other time periods (all paired *ts* □ 3.92, *ps* □ .001, *ds* □ .61). Yet participants also expected and remembered more negative affect than their on-line measures corroborated, a view that is hardly rosy (all paired *ts* □ 3.49, *ps* □.001, *ds* □.54). We return to this issue in the Discussion.

Our primary prediction concerned the influence of predicted, online, and remembered experience on the desire to repeat the experience. We first computed simple zero-order correlations between the various time periods for each of the three dependent measures (Table 1). The last column of Table 1 reveals positive correlations between desire to repeat the experience and the measures of overall subjective experience and positive affect, and negative correlations between desire to repeat the experience and measures of negative affect, indicating that the more favorably the trip was predicted, experienced, and remembered, the more participants desired to repeat it. The table also shows that this relation increased from predicted experience (for which correlations are small and in some cases nonsignificant) to online experience to remembered experience (for which correlations are sizable and significant).

**Table 1.** *Simple zero-order correlations between predicted, on-line, and remembered spring-break experience and desire to repeat the experience*

| Measure | Prediction 2 weeks prior | Prediction 2–4 days prior | On-line experience | Recall 2–4 days after | Recall 4 weeks after | Desire to repeat experience |
|---|---|---|---|---|---|---|
| Prediction 2 weeks prior | 1.00 | .78/.53/.72 | .40/.35/.36 | .50/.47/.51 | .59/.43/.43 | .33/.19/−.22 |
| Prediction 2–4 days prior | | 1.00 | .45/.57/.46 | .45/.71/.69 | .51/.65/.56 | .29/.35/−.21 |
| On-line experience | | | 1.00 | .58/.63/.70 | .75/.53/.63 | .54/.36/−.23 |
| Recall 2–4 days after | | | | 1.00 | .82/.84/.76 | .56/.49/−.27 |
| Recall 4 weeks after | | | | | 1.00 | .72/.53/−.48 |
| Desire to repeat experience | | | | | | 1.00 |

*Note*. The three coefficients in each cell correspond to the overall-subjective-experience, positive-affect, and negative-affect measures, respectively. All correlations greater than .29 are statistically significant at the .05 two-tailed alpha.

We next performed path analyses between predicted, on-line, and remembered experience and participants' desire to repeat the experience, using the structural equation modeling program within the AMOS procedure (Arbuckle, 1999). We performed separate analyses for overall subjective experience, positive affect, and negative affect. For simplicity and ease of explanation, the results we report here include only one predicted and one remembered time period, 2 weeks prior to and 4 weeks after spring break, omitting the measures for 2 to 4 days prior to break and 2 to 4 days after break. The pattern of data was similar when the other two time periods were included.

As Figure 2 shows, the best predictor of participants' desire to repeat the break—indeed, the *only* predictor—was remembered experience. Neither predicted nor on-line experience uniquely predicted participants' desire to repeat the experience in any of the three path analyses. In other words, remembered experience appeared to mediate the effects of on-line experience in predicting participants' desire to repeat the experience. Interestingly, there was a tendency for predicted experience to influence remembered experience above and beyond online experience. Participants' expectations had a direct influence on their memories, a finding consistent with prior research (Klaaren et al.,1994).

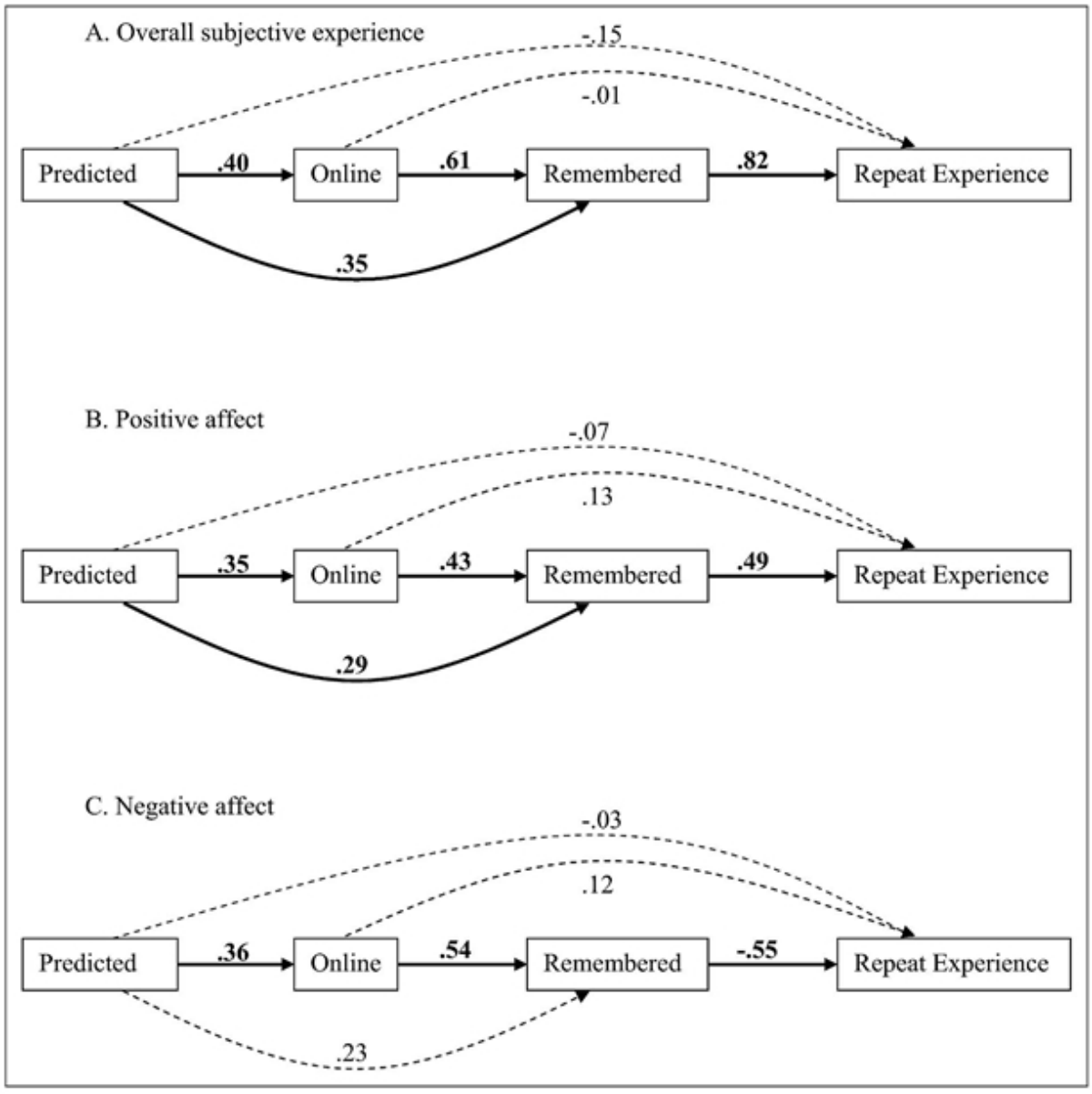


**Fig. 2.** Path analysis between predicted, on-line, and remembered spring-break experience and desire to repeat the experience. Separate paths are shown for overall subjective experience, positive affect, and negative affect. Paths significant at the .05 two-tailed alpha are indicated by a bold line, and nonsignificant paths are indicated by a dashed line.

## DISCUSSION

What is the best measure of an individual's subjective experience? Recently, it has been suggested that an objective record of an individual's experience must come from a series of on-line assessments made during the experience, rather than from global evaluations made after it has ended (Kahneman, 1999). The present research suggests that regardless of the veracity of this view, retrospective measures may be important as well. In a path analysis comparing the relations among predicted, on-line, and remembered experience of spring-break vacationers and their desire to take a similar vacation in the future, the best predictor of that desire was remembered experience. Although on-line measures may be superior for estimating experience, retrospective global evaluations may be superior for predicting people's future choices.

We do not mean to suggest that what took place during students' vacations had nothing to do with their later memories. On-line ratings were highly related to retrospective evaluations of the break (Fig. 2). However, the nonsignificant path between on-line experience and the desire to repeat the experience in the complete model suggests that when on-line and remembered experience differed, it was remembered experience that predicted this desire. This was true despite the fact that of the two measures, on-line experience was by far the more reliable, as it was an aggregate of dozens of measurements collected over multiple days. The fact that retrospective measures may be better predictors of future choices than on-line evaluations, while at the same time being less accurate, points to the likelihood that individuals often make choices that fail to optimize hedonic experience.

One unexpected finding came from our measure of negative affect: Students predicted and remembered experiencing higher levels of negative affect than their on-line experiences corroborated (Fig. 1). At first glance, these findings appear contradictory not only with our findings for overall subjective experience and positive affect, but also with prior work suggesting a "rosy view" in predicted and remembered experience (Mitchell et al., 1997; Sutton, 1992; Wirtz & Kruger, 2002). Yet although the present data are inconsistent in one sense—that participants anticipated and remembered spring break as being both better and worse than it really was—they are consistent in another: Participants overestimated the *intensity* of their spring-break experience. Other researchers have found a similar overestimation of intensity for predictions and recollections of positive and negative affect (Buehler & McFarland, 2001; McFarland, Ross, & DeCourville, 1989; Thomas & Diener, 1990; Wilson, Meyers, & Gilbert, 2002).

Why do people systematically overestimate affective intensity? Although they know that most events have both positive and negative moments, we suspect that people fail to consider all that *does not* happen: the moments in between the notable events and their affective reactions to those moments. When people predict and remember their experiences, hedonically neutral events are unlikely to be taken into account (cf. Loewenstein & Schkade, 1999; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). One possible explanation is that people hold implicit theories that guide their predictions and recollections (Ross, 1989). An implicit theory of spring break as an affectively intense event may fail to take into account all the break's relatively neutral moments, resulting in an overestimation of both global positive affect and global negative affect.

Of course, future work is necessary in order to further determine what factors account for and influence this overestimation of intensity in predictions and recollections. In addition, future work might benefit from a different operationalization of choice. Recall that participants were

asked to indicate their desire to take a similar trip in the future, rather than to actually choose and then participate in another trip. Although such "behavioroid" measures have been shown to have validity (Aronson, Ellsworth, Carlsmith, & Gonzales, 1990), future research might benefit from a direct measure of future behavior.

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