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On the Making of an Experience: The Effects of Breaking and Combining Experiences on their Overall Evaluation

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ABSTRACT

How do people create overall evaluations for experiences that change in intensity over time? What 'rules' do they use for combining such different intensities into single overall evaluations? And what factors influence these integration rules? This paper starts by examining the relationship between the patterns of experiences over time and their overall evaluations. Within this framework, we propose and test the idea that the rules for combining such experiences depend on whether the experiences are perceived to be composed of single or multiple parts (i.e. continuous or discrete). In two experiments we demonstrate that an experience's level of cohesiveness moderates the relationship between its pattern and overall evaluation. The results show that breaking up experiences substantially reduces the impact of patterns on overall evaluations. In addition, we demonstrate that continuously measuring momentary intensities produces a similar effect on this relationship, causing us to speculate that providing continuous intensity responses causes subjects to self-segment the experience. Copyright © 2000 John Wiley & Sons, Ltd.

KEY WORDS combing experiences; hedonic profiles; integration rules; level of segmentation

> By slowing the course of their night, by dividing it into different stages, each separate from the next, Madame de T. has succeeded in giving the small span of time accorded them the semblance of a marvellous little architecture, of a form. Imposing form on a period of time is what beauty demands, but so does memory, for what is formless cannot be grasped, or committed to memory (Kundera, 1996, p. 38).

Almost every daily experience one can think of changes in its intensity over time. Imagine, for example, watching a play where some of its parts are engaging and intriguing while others leave much to be desired. For simplicity let us imagine that the pattern of emotions this play elicits is quite orderly and follows an improving trend from being very boring to being very exciting. Now imagine that after watching the entire play you are asked to give an overall evaluation that would reflect your enjoyment

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of the entire experience. On what aspects of the play will you base your evaluation? Will it be based on the average emotion you experienced? The maximum positive or negative emotions? Your emotion at the end of the experience? Or the rate at which your emotions changed? In addition, how would your overall evaluation change if your improving experience consisted of a play that is divided into sections (acts) or not? These questions are at the core of this paper.

Recently there has been an increased interest in the impact of changes in intensity over time and the corresponding overall retrospective evaluations given to these experiences (Ariely 1998; Loewenstein and Prelec, 1993; Varey and Kahneman, 1992; Hsee and Abelson, 1991). Such experiences can be characterized in terms of '*patterns*' or *hedonic profiles*. The hedonic profile of an experience refers to the relationship between the intensity pattern of the experience and its duration. To illustrate the notion of hedonic profile, consider a play that starts badly but improves over time. The resulting pattern of enjoyment is such that if we were to ask you for your enjoyment every 10 minutes (on a scale from 1 to 10, where 1 stands for 'not enjoyable at all' and 10 for 'very enjoyable'), we might get the following pattern of responses: [4, 5, 6, 7, 8, 9]. The main goal of research in this area has been to find the 'rules' (referred to as *integration rules*) individuals use to combine such patterns into overall evaluations.

Although such hedonic profiles can be thought of as describing the on-going intensity of single or multiple experiences (e.g. a single song or a collection of songs respectively), work in this area has concentrated on integration rules for single experiences. To clarify this distinction, consider again the example of watching a play, but this time imagine the play as having three acts with a break between each act. In this case, assume that your pattern of momentary enjoyment for this entire play is the same as before, but the experience is segmented differently. We can represent this segmented hedonic pattern as [{4, 5}{6, 7}{8, 9}], where the curly brackets represent the different acts. The main proposition of the current work is that the relationship between experiences and their overall evaluation will be different depending on whether their hedonic profiles are segmented or not. Note that in our use of the terms single, segmented, and multiple experiences, we do not imply that either of those definitions exists in their pure form. A play, for example, can be perceived as a single unit, as a composite of different acts, a collection of stanzas, monologues, etc. Therefore, we conceptualize single and multiple experiences as points on a continuum, and their definition is only relative to each other.

To examine the differences in the ways single and multiple experiences are evaluated, we explore the impact of segmentation on the relationship between hedonic profiles and their overall evaluation. The remainder of the paper is organized in the following way. First, we provide a general background on integration rules for single experiences. Then, we argue why differences between segmented and cohesive experiences should exist. Finally, we provide support for these ideas in two experiments.

INTERGRATION RULES FOR SINGLE EXPERIENCES

Research examining the relationship between hedonic profiles and their overall evaluation demonstrated that the way experiences develop over time (i.e. their pattern) has a large impact on their overall evaluation (Loewenstein and Prelec, 1993; Hsee and Abelson, 1991). For example, Ariely (1998) demonstrated that the evaluation of painful experiences of equal overall amount of pain (area under the pain curve) is highly dependent on their pattern. Specifically, a sequence of aversive stimuli that increased in its intensity over time [2, 3, 4, 5, 6] was rated as more painful than a sequence that did not change over time [4, 4, 4, 4, 4], which in turn was perceived as more painful than a sequence that decreased in its intensity over time [6, 5, 4, 3, 2]. Similar findings have been demonstrated in numerous domains, such as pain (Ariely, 1998; Varey and Kahneman, 1992), discomfort (Kahneman *et al.*, 1993; Redelmeier and Kahneman, 1996), TV advertisements (Baumgartner, Sujan, and Padgett, 1997), and queuing experiences (Carmon and Kahneman, 1996).

Patterns of experiences over time can be characterized by many different aspects, and indeed multiple aspects have been shown to impact overall evaluations. Among the most important aspects are the trend of an experience (Loewenstein and Prelec, 1993), its rate of change (Hsee, Abelson, and Salovey, 1991; Hsee and Abelson, 1991), and the maximum and final intensities associated with the experience (Varey and Kahneman, 1992; Kahneman *et al.*, 1993; Fredrickson and Kahneman, 1993). In a recent paper, Ariely (1998) tested these different aspects in a way that allowed their relative importance to be compared. The conclusions were that the trend of an experience (particularly toward its end) was the most important predictor of the overall evaluation. In addition, the rate of change at the initial part of the experience, the maximum and final intensities, and the duration of the experience were also found to play an important role in the overall evaluations. In sum, such characteristics of experiences over time (i.e. trend, maximum, and final intensities) have been shown to have a positive impact on overall evaluations such that an increase in any of them increases overall evaluations.

The work we have reviewed above can be characterized as falling within two general experimental approaches. While both are concerned with the relationship between the characteristics of the pattern of the experience and its overall evaluation, they differ with respect to the way they measure such patterns. The first approach characterizes patterns by their manipulated intensities (Loewenstein and Prelec, 1993; Hsee, Abelson, and Salovey, 1991), and the second characterizes patterns by their perceived intensities. By defining patterns based on the stimuli characteristics, the first approach is objective, yet it does not capture how subjects perceive such patterns. The second approach address this issue by asking respondents to continuously rate the momentary intensity of their experiences (on-line), and characterize the patterns by these perceived intensities (Fredrickson and Kahneman, 1993; Redelmeier and Kahneman, 1996). Therefore, the main conceptual difference between the two perspectives is whether they focused on the final evaluation of the experience as a function of the physical stimuli, or as a function of the perceived stimuli (i.e. momentary evaluations). Although the general conclusions from both research approaches point to the same overall conclusion, in a direct comparison of the two, Ariely (1998) found that measurement of on-line evaluations decreased the impact of the sequences' pattern on overall evaluations. We return to effect of on-line measurement later as it relates to segmentation.

INTEGRATING EXPERIENCES WITH MULTIPLE PARTS

Research relating momentary and overall evaluations has concentrated mostly on hedonic profiles of single experiences and their overall evaluation. However, as suggested in the opening quote, this relationship of momentary evaluation and overall retrospective evaluation might be different if experiences are perceived as cohesive or segmented. Going back to our example, this implies that a play that is perceived as being composed of a single experience, e.g. [4, 5, 6, 7, 8, 9], might indeed be evaluated by the integration rules noted earlier (such as the rate of intensity change, and the maximum and final intensities). We propose that the evaluation of the same play might be very different when it is divided into acts, e.g. [{4, 5}{6, 7}{8, 9}].

Some initial empirical results related to this issue are described in Ariely (1998, Experiment 2). At the end of this experiment, after experiencing 42 different pain patterns (which took about an hour), subjects were asked to evaluate the overall intensity of the entire experiment. The results indicated that, although the overall responses at the end of each trial were best characterized by the pattern of the hedonic profile, this was not true for the experiment as a whole. For the global experiment evaluation, the mean of the intensities rather than their pattern was related to the experiment's overall evaluation. These results suggest that the rate of change, the maximum, and the final intensities were the best indicators for the overall evaluation of each trial, but not for the global evaluation of the entire

experiment. Because this experiment was not designed to examine this issue, it had very little power in this regard (due to the length of the experiment, the random ordering of the trials, and the limited number of measures). Therefore, we use these results as our starting point, and further explore the impact of experience segmentation on these integration rules.

WHY SHOULD MULTIPLE, OR SEGMENTED, EXPERIENCES BE DIFFERENT FROM SINGLE EXPERIENCES?

Given that our daily activities are composed of multiple segments, it seems reasonable to hypothesize that experiences from multiple segments will not tend to merge into one continuous hedonic profile. For example, although the hedonic profile associated with an experience (such as a dental treatment) might be a good predictor for our overall evaluation of that experience, it is hard to believe that the hedonic profile for that experience will merge with the hedonic profile for later experiences (such as lunch or other experiences) to form an overall profile. Therefore, we propose that, although the overall evaluation of a single hedonic profile is highly dependent on its pattern, the overall evaluation of multiple hedonic profiles is not. When evaluating hedonic profiles that are perceived to be composed of multiple segments, their overall evaluation will rely more heavily on the mean of the individual segments and less so on their global (combined) hedonic profile. Specifically, we offer the following two postulates:

(1) Once a hedonic experience is over, its representation contains an overall evaluation, but not the shape of its pattern.
(2) The integration rules across experiences are more heavily based on their mean intensity and less on their pattern.

As a simplified example, consider cases where the integration rule is such that the overall rating of a hedonic profile relies on only two aspects, its mean intensity and final intensity. With such a rule, an experience such as [4, 5, 6, 7, 8, 9] would result in a rating score of 7.75 (based on an average of 6.5 and an end of 9). The same intensities given in the reverse order [9, 8, 7, 6, 5, 4] would be evaluated with the same rule as 5.25 (based on an average of 6.5 and an end of 4). Our argument is that once such an experience is over, its representation no longer contains its pattern but rather only its overall evaluation (cf. Ariely and Burbeck, 1998). In addition, we argue that the evaluation of multiple episodes relies on their overall evaluations but not on the hedonic profile of those overall intensities. Therefore, if we segment the two experiences noted above, the difference in their evaluation will be reduced substantially. In a case where we segment the experience into three parts, the ascending sequence [{4, 5} {6, 7} {8, 9}] might be evaluated based on the series [{4.75}{6.75}{8.75}], and its overall evaluation would be 6.75, the mean of this latter series. Using the same rule, the descending series [{9, 8}{7, 6} {5, 4}] will be evaluated based on the series [{8.25}{6.25}{4.25}], and its overall evaluation will be 6.25. If we consider the most extreme example of segmentation, we get no difference between the two, since both [{4}{5}{6}{7}{8}{9}] and [{9}{8}{7}{6}{5}{4}] would be evaluated based on their mean (6.5).

From the example above one can readily see that the difference between the ascending and descending profiles is largest in the single (cohesive) case (2.5), smaller in the partial segmentation case (0.5), and non existent when segmentation is complete. Following the same logic, we hypothesize that the global evaluation of multiple experiences, each with its own hedonic pattern, will not be based on the composite hedonic pattern for all the experiences. Rather, it will be more heavily based on the discrete overall evaluations for each of the experiences (i.e. their separate overall evaluations). To provide a test of these ideas, we will next describe two experiments in which we take an experience and present it either as a single continuous unit or as multiple discrete units.

EXPERIMENT 1: THE ANNOYING SOUNDS EXPERIMENT

Method

Subjects

Fifty-four students at Duke University participated in the experiment and were paid $10 for doing so. Subjects were randomly assigned to the two experimental conditions.

Design and procedure

To isolate the impact of experience segmentation on the integration rules we used stimuli with different hedonic profiles and change their apparent cohesiveness, such that in one condition the experience was continuous, while in the other it was composed of multiple parts. The stimuli chosen for this experiment were annoying sounds. The sounds were made by using a sawtooth waveform at a frequency of 3 MHz, which resulted in a sound similar to the emergency broadcast signal. Five different intensities of this sound were taken as the building blocks for constructing the eight hedonic patterns. Each of these building blocks was a segment lasting 5 seconds and the patterns themselves were composed of ten such intensity-constant segments. By using this approach the hedonic patterns resembled a step-like pattern, and the segmentation manipulation was operationalized by introducing 5-second blank intervals between the sound segments (see Exhibit 1). The experiment was computer controlled and subjects worked individually in a soundproof room. During each of the eight trials, subjects were exposed to a single hedonic profile. Once the experience was over, subjects were asked to think back on the whole trial and rate its overall annoyance on a scale from 0 (not annoying at all) to 100 (very annoying).

The within-subjects factors

The different hedonic profiles were manipulated by varying the order of sound segments, while keeping the physical intensity during the entire experience constant (see Exhibit 1). Four different orders of intensities over time (*patterns*) were used. The first started at a low level and steadily increased in intensity (named up). The second pattern was a horizontal reflection of the up pattern, which started high and steadily decreased (named down). The third pattern started at a high intensity, decreased in intensity, and then increased in intensity to its initial level (named down&up). The fourth pattern was a horizontal reflection of the down&up pattern, starting at a low intensity, increasing and then decreasing in intensity (named up&down).

The second within-subjects factor, which is the core of the current work, involved a manipulation of the cohesive structure of the hedonic profiles (*segmentation*). This segmentation manipulation had two levels. In one level the experience was presented as cohesive (the *continuous* condition), and in the other the experience was artificially segmented into five parts (the *discrete* condition). In the continuous condition the sound segments immediately followed each other, while in the discrete condition a blank interval was introduced between each of the segments (see Exhibit 1).

The between-subjects factor

The between-subjects factor manipulated the type of measurement used (*measurement*) and had two levels. In one condition, subjects provided overall responses at the end of each experience (the *end-eval* condition). In the other condition subjects provided overall responses at the end of each trial, but also provided continuous on-line ratings of their annoyance level throughout the entire experience (the *on-line&end-eval* condition). This on-line rating was elicited by moving a probe on the computer screen

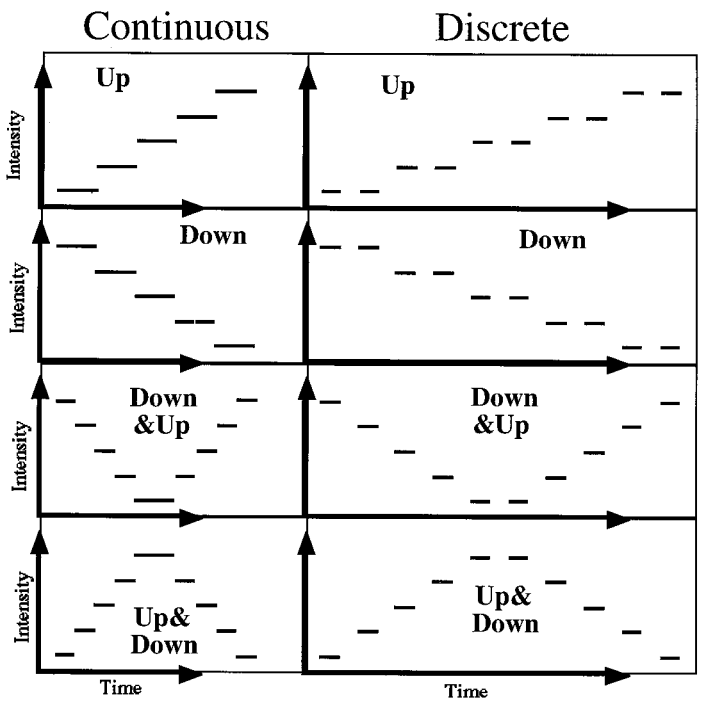

Exhibit 1. The four patterns and the two segmentation conditions used in the Annoying Sounds Experiment. Note that the 'area under the sound curve' is equal for all four patterns

to continuously indicate subjects' level of momentary annoyance. This measurement manipulation had two goals, a manipulation check and a test of measurement interference. As a manipulation check, we wanted to test whether the intended pattern of intensities over time was indeed what the subjects experienced. The second goal was to examine the possible intrusive effects of the on-line measures. Since this effect is similar to the hypothesized impact of segmentation, we decided to test them together.

In summary, the main structure of the Annoying Sounds Experiment was a three-factor mixed design, with patterns and segmentation as within-subjects factors and measurement as a between-subjects factor. Our first expectation was to replicate previous findings and show that patterns have an impact on overall evaluations. Within this relationship we hypothesized that the impact of patterns will diminish when segmentation is increased (the discrete condition), and when momentary evaluations are provided (the on-line&end-eval condition).

Results

First we examined whether the intended pattern manipulation had the desired impact on subjects' on-line responses. As can be seen in Exhibit 2, the manipulation was successful, and the match between the subjective and intended patterns was high.

Next, an overall three-factor ANOVA was carried out with segmentation and patterns as within-subjects factors and measurement as a between-subjects factor. The overall results indicated a non-significant three-way interaction, but two significant two-way interactions. The patterns by measurement interaction was significant [$F_{(3,156)} = 5.08$, $p < 0.002$], as was the patterns by segmentation interaction [$F_{(3,156)} = 16.63$, $p < 0.001$]. The segmentation by measurement interaction was not

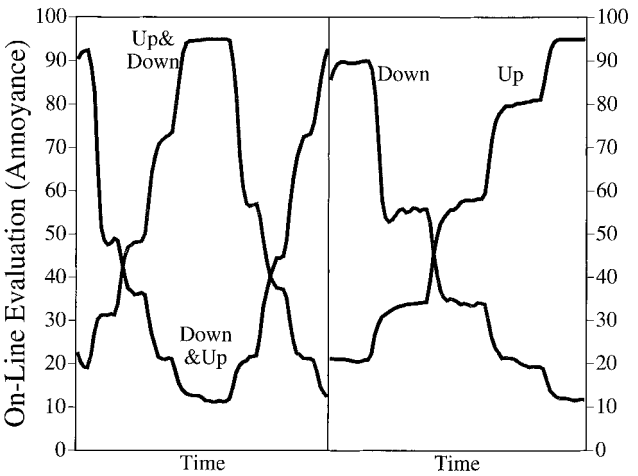

Exhibit 2. Mean on-line evaluations based on subjects in the on-line&end-eval conditions and for the four hedonic profiles

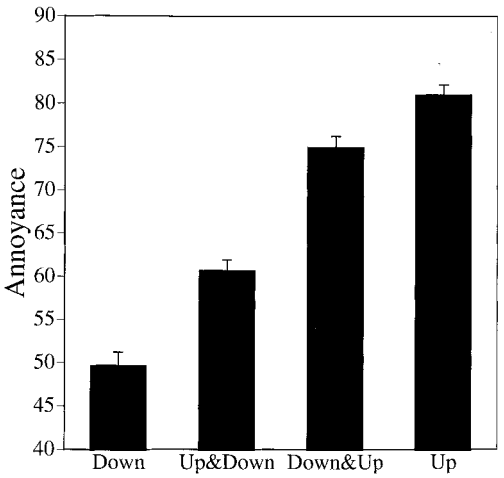

Exhibit 3. Mean evaluation for the four hedonic profiles across all conditions. Error bars are based on standard error

significant [$F_{(1,52)} = 0.31$, $p = 0.86$]. As for the main effects, the main effect for patterns was significant [$F_{(3,156)} = 133.48$, $p < 0.001$], but both main effects for measurement and segmentation were not.

To examine the main effect of patterns, we separately plotted the overall evaluations for the four patterns. As can be seen in Exhibit 3, the pattern of experience had a strong impact on its overall evaluation (all differences were significant at the 0.001 level), indicating that patterns that ended with increasing trends were evaluated as more annoying.

To examine more deeply into the pattern by segmentation interaction, consider Exhibit 4, where the same data are plotted separately for the two levels of segmentation. The most interesting aspect of this exhibit is that the impact of the hedonic pattern itself seems to be higher in the continuous condition than in the discrete condition. This conclusion stems from the fact that the continuous condition produced a higher evaluation for the patterns with final increasing trends (up and down&up), while at the same time producing lower evaluation for the patterns with final decreasing trends (down and

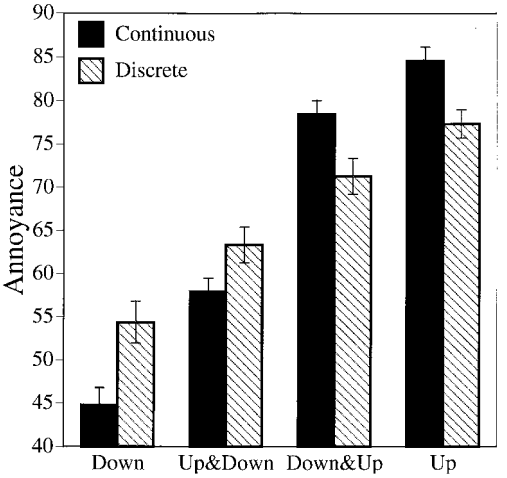

Exhibit 4. Mean evaluation for the four hedonic profiles, plotted separately for the two segmentation conditions. Error bars are based on standard error.

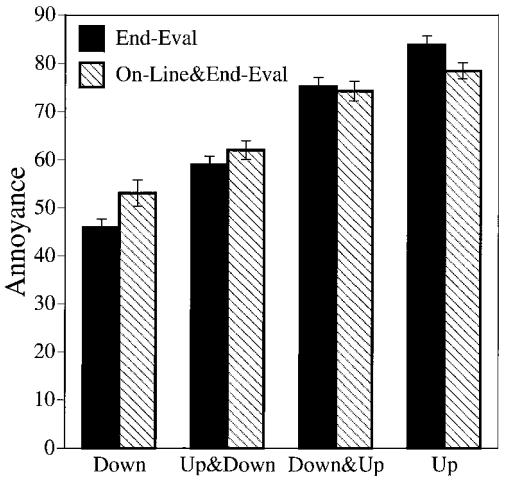

Exhibit 5. Mean evaluation for the four hedonic profiles, plotted separately for the two measurement conditions. Error bars are based on standard error

up&down). For the patterns with the increased final trends, the overall evaluation in the continuous condition ($\bar{X} = 81.48$) was higher than the overall evaluation for the discrete condition ($\bar{X} = 74.31$), with this difference being statistically significant [$\Delta\bar{X} = 7.2$, $F_{(1,52)} = 22.19$, $p < 0.001$]. For the patterns with the decreasing final trends, the overall evaluation in the continuous condition ($\bar{X} = 51.34$) was lower than the overall evaluation for the discrete condition ($\bar{X} = 58.84$), also yielding a statistically significant difference [$\Delta\bar{X} = 7.5$, $F_{(1,52)} = 24.23$, $p < 0.001$].

The pattern by measurement interaction showed similar results to the results of the pattern by segmentation interaction. As can be seen in Exhibit 5, these results showed that the impact of the hedonic pattern seems to be higher in the end-eval condition than in the on-line&end-eval condition. This conclusion stems from the fact that the end-eval condition produced a higher evaluation for the patterns with final increasing trends (up and down&up), while at the same time producing lower

evaluation for the patterns with final decreasing trends (down and up&down). For the patterns with the increased final trends, the overall evaluation in the end-eval condition ($\bar{X} = 79.6$) was higher than the overall evaluation for the on-line&end-eval condition ($\bar{X} = 76.2$), with this difference being statistically significant [$\Delta\bar{X} = 3.4$, $F_{(1,52)} = 3.01$, $p = 0.046$]. For the patterns with the decreasing final trends, the overall evaluation in the end-eval condition ($\bar{X} = 52$) was lower than the overall evaluation for the on-line&end-eval condition ($\bar{X} = 57.7$), and this difference was also statistically significant [$\Delta\bar{X} = 5.7$, $F_{(1,52)} = 3.92$, $p = 0.024$]. These results demonstrate that the impact of pattern decreased when subjects were required to provide on-line measurements.

The similarity of the results of the measurement and segmentation factors is somewhat striking. It is clear that the overall impact of hedonic profiles (pattern) is weakened by on-line measurements as well as by increased segmentation. To further investigate these initial results we next attempt to replicate them with an experience of a different nature. We will therefore discuss the results of the current experiment following the next experiment.

EXPERIMENT 2: THE PERFORMANCE FEEDBACK EXPERIMENT

Method

Subjects

One hundred and twenty students at Duke University and at the University of North Carolina at Chapel Hill participated in the experiment and were paid $4 for doing so. Subjects were randomly assigned to the four experimental conditions.

Design and procedure

The structure and design of this experiment were essentially the same as in the Annoying Sounds Experiment, yet with a few important differences. First we used a performance simulation game as the domain for the experiment. Second, patterns were manipulated as smooth rather than step-like functions (compare Exhibit 1 and Exhibit 6). Third, the segmentation manipulation was conducted by altering the continuity by which the performance feedback changed from one state to another. The fourth and final difference was that the segmentation factor was a between-subjects manipulation, so that each subject participated either in the continuous or discrete conditions. The experiment was computer controlled and subjects worked individually in a soundproof room.

At the onset of the experiment, subjects indicated their preferred investment strategy for the stock market through a series of questions. The questions referred to the risk level, the time horizon of their

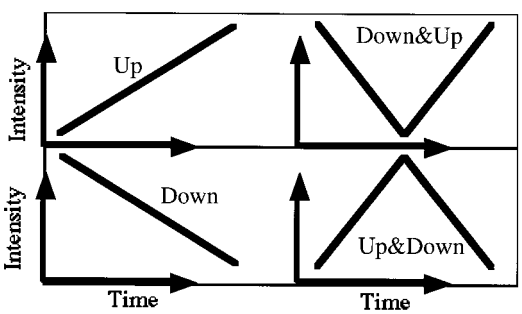

Exhibit 6. A schematic illustration of the four hedonic profiles used in the Performance Feedback Experiment. Note that the 'area under the curve' is equal for all four patterns

investment, the type of companies they wanted to invest in, etc. This was done to increase the personal relevance of the changes in the portfolio over time (i.e. the hedonic profiles). Next, subjects were told that, based on their preferences, the computer had chosen four different portfolios, each composed of five different stocks. The portfolios were represented by a bar chart with five bars, each indicating the level of one of the stocks, with the five bars together representing the entire portfolio. On each of the four trials subjects were presented with a different portfolio, examined the way it changed over time, and provided an overall satisfaction evaluation for their performance as investors.

The within-subjects factor

Four different patterns were created while keeping the overall intensity during the entire experience constant (see Exhibit 6). As in the Annoying Sounds Experiment, the patterns themselves were the same (up, down, down&up, up&down), and were created by varying the height of the bars over time.

The between-subjects factors

Again we orthogonally manipulated the cohesiveness of the experience (segmentation), and the type of measurement used (measurement). The segmentation factor had two levels, one where the experience was presented as cohesive (the continuous condition), and another where the experience was artificially segmented into five parts (the discrete condition). In the continuous condition the performance level changed smoothly according to the specific profile (see Exhibit 6), while in the discrete condition this change occurred in five discrete and clearly distinct steps. Note that the timing was controlled in a way that all conditions were of equal duration. The second between-subjects factor was the type of measurement used (measurement), with two levels manipulated exactly as in the Annoying Sounds Experiment (i.e. end-eval and on-line&end-eval conditions).

To recap, the overall design of the performance-feedback experiment was a three factor mixed design, with patterns as a within-subjects factor, and segmentation and measurement as between-subjects factors. We expected the results to replicate the ones for the Annoying Sounds Experiment by showing an effect of patterns on the overall evaluations, and that this effect would be substantially reduced for segmented experience (i.e. in the discrete condition), or when momentary evaluations are provided (i.e. the on-line&end-eval condition).

Results

First, we checked that the intensity pattern manipulation had the intended effect (as measured by the on-line measures). Again, the results of this measure showed that the momentary intensity patterns followed the intended manipulated intensity. We then continued to examine the main results of the experiment. The overall ratings were analyzed using a three-factor ANOVA with segmentation and measurement as between-subjects factors and patterns as a within-subjects factor. The results showed that the three-way interaction was not statistically significant, but as predicted, two of the three two-way interactions were significant. The patterns by measurement [$F_{(3,351)} = 17.20$, $p < 0.001$] and patterns by segmentation [$F_{(3,351)} = 16.85$, $p < 0.001$] interactions were highly significant, but the segmentation by measurement interaction was not [$F_{(1,117)} = 0.32$, $p = 0.86$]. In addition, the main effect for patterns was also significant [$F_{(3,351)} = 289.24$, $p < 0.001$], but the main effects for measurement and segmentation were not significant. These results replicated the results of the Annoying Sounds Experiment by showing the same effect for patterns, segmentation and measurement.

Since the results of the Performance Feedback Experiment replicated the results of the Annoying Sounds Experiment, we decided not to replicate the analysis presented for the previous experiment.

Instead, we will concentrate on a different way of looking at the results, with the goal of shedding more light on the current as well as the previous results. The approach we take here is to directly measure the impact of the different patterns and compare this effect across the different conditions. To do so we created two difference scores to represent the differential impact of increasing and decreasing profiles.

The first measure was based on the difference between the overall evaluation for the up and down patterns (this Difference Score for single sloped patterns was named *DS1*). The second measure was composed of the difference between the down&up and the up&down patterns (this Difference Score for doubled sloped patterns was named *DS2*). Note that since the stimuli in each of the two pairs were horizontal reflections of each other, changes in their evaluations can only be attributed to their pattern. These two effect size measures were then separately analyzed in a two-factor ANOVA with both measurement and segmentation as between-subjects factors. The measure based on the single sloped patterns (DS1) showed a main effect for measurement [$F_{(1,117)} = 28.89, p < 0.001$] and a main effect for segmentation [$F_{(1,117)} = 25.42, p < 0.001$], with no significant interaction between them. Similarly, the measure based on the doubled sloped patterns (DS2) showed a main effect for measurement [$F_{(1,117)} = 9.29, p < 0.003$] and a main effect for segmentation [$F_{(1,117)} = 14.04, p < 0.001$], again with no significant interaction.

These results demonstrate that segmenting an experience, as well as asking subjects to provide on-line ratings, decreased the impact of the hedonic profiles on their overall evaluations. From Exhibit 7 we can see that the impact of patterns was higher for the singled sloped patterns (DS1) compared with the doubled sloped patterns (DS2). Within these two measures, we can also see that the impact of patterns was higher when the stimuli were perceived to be more continuous and also when subjects were not asked to provide on-line ratings.

DISCUSSION

Consistent with prior work (e.g. Ariely, 1998; Loewenstein and Prelec, 1993; Varey and Kahneman, 1992), we demonstrated in two experiments that the hedonic profile of an experience has a strong

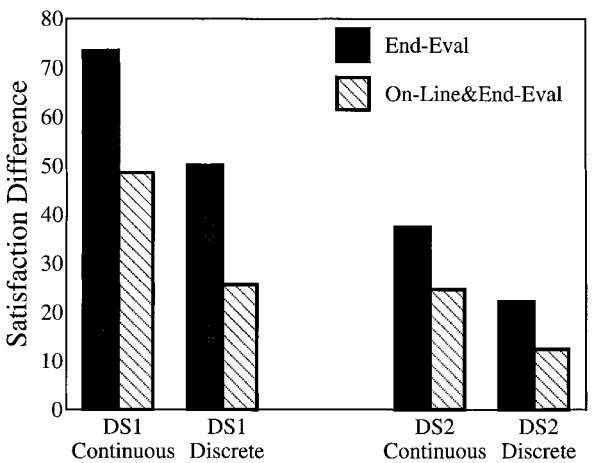

Exhibit 7. Mean satisfaction differences for the increasing and decreasing profiles. The two difference scores are based on the single sloped patterns (DS1) and the double sloped patterns (DS2). Plotted separately for the two segmentation and measurement conditions. Error bars are based on standard error

impact on its overall evaluation. As expected, patterns that had increasing final trends (up and down&up) were evaluated as more intense, whereas patterns that had decreasing final trends (down and up&down) were evaluated as less intense. Furthermore, the difference between the evaluation of the patterns that had a single trend (up and down) was larger than the difference between the patterns that had two trends (up&down and down&up). This final point indicates that the initial part of the experience also impacts its overall evaluation, and that the integration rules cannot simply be described by the Peak and End (Varey and Kahneman, 1992; Kahneman *et al.*, 1993). Building on the importance of the experiences' pattern, we demonstrated the moderating effects of two orthogonally manipulated factors, the perceived cohesiveness of the experience (segmentation), and whether subjects provided on-line momentary evaluations (measurement).

Segmentation was operationalized differently in the two experiments. In the Performance Feedback Experiment, segmentation was manipulated by changing the visual characteristics of the display, while in the Annoying Sounds Experiment, segmentation was manipulated by using blank time intervals between the different segments of the experience. In both experiments, the segmentation manipulation clearly showed that breaking an experience into parts changed the relationship between hedonic profiles and their overall evaluation. Specifically, once an experience was segmented, its overall evaluation shifted in the direction of the experiences' mean. We proposed that once an experience is over, its representation no longer contains the shape of the experiences' pattern but only an overall summary measure. In addition, we postulated that when evaluating multiple experiences, it is their individual representations and not their pattern that is used as a basis for this judgment. If both of these postulates are true, then an increased segmentation should cause the overall evaluation to be based more heavily on the intensity of the segments themselves and less on their relationship in time (their pattern). The results showed exactly this effect, supporting our main hypotheses.

The measurement manipulation in both experiments provided strong evidence regarding the impact of on-line evaluations on the relationship between hedonic patterns and their overall evaluation. The results of both experiments showed that asking subjects to provide momentary responses changed the impact of the hedonic profiles on their overall evaluation. Similar to the effect of the segmentation manipulation (compare Exhibit 4 to Exhibit 5 and also see Exhibit 7), asking subjects to provide momentary evaluations caused their overall evaluation to be based more heavily on the intensity of the segments themselves, and less on their relationship in time (i.e. their pattern). Such increased reliance on the mean intensities caused patterns with increasing trends to receive lower evaluations and patterns with decreasing trends to receive higher evaluations when on-line measurements were provided than when they were not.

If our story is correct, why is it that the effect of patterns did not diminish completely in the case of multiple experiences? And why is it that other researchers (Loewenstein and Prelec, 1993) have found pattern effects for unrelated experiences (such as dinner and visiting an annoying aunt)? The answer to this question relates to the level of segmentation. Although segmentation manipulations can make experiences seem less cohesive and more like multiple experiences, even the most segmented manipulations may still have some cohesive structure. Such cohesiveness can be based on segments' proximity in time, their contextual relationship, or the mere fact that they are evaluated together. Clearly there is a tradeoff between the strength of the segmentation manipulation and the ability to maintain the similarity between the experiences in the discrete and continuous conditions. We chose to use a relatively subtle manipulation (which is less powerful), in order to maintain the similarity between the continuous and discrete experiences.

Additional support for the moderating effect of experience continuity comes from the results of the measurement manipulation. Evidence from both experiments (as well as Ariely, 1998) demonstrated that asking subjects to provide on-line responses attenuated the impact of the hedonic profiles, and the

overall evaluations were pulled toward the mean of the experience. We propose that when subjects provide on-line evaluations, they are more likely to subjectively segment the experience into different parts. Consider, for example, the case where a subject is responding to a stimulus with an increased intensity (up). For a certain period the subject indicates that the intensity of the experience is low, followed by a period in which the subject indicates the intensity is medium, and ending with a period in which the subject indicates the intensity is high. These three periods, segmented by the subject's own indication of intensity, might by themselves reduce the perceived cohesiveness of the experience. The results support this view by showing a high similarity between the measurement and segmentation manipulations, suggesting that providing on-line responses cause respondents to self-segment experiences.

In the two experiments we reported here we demonstrated the effects of segmentation on the integration of experiences over time. Next, we would like to mention a few ways by which segmentation could be manipulated in our day to day lives. The main cause of segmentation is most likely due to the external structure of one's life. Examples for this could be the frequency by which people get paid (daily, weekly, or monthly), the frequency by which they change jobs, course of study, significant others, and profession. Another cause for segmentation could be due to the predictability of structure in one's life. In such cases people who experience more unexpected activities would be more likely to segment their days by these activities, hence living more segmented lives.

To the extent that experiences have intensities that change over time (as we believe most do), these types of natural segmentation can have real impact on life satisfaction. Imagine for example, a vacation that is clouded by arguments with one's spouse. Moreover, imagine that these arguments are either concentrated at one point in the vacation (thus hardly segmenting it) or spaced throughout the entire vacation (thus strongly segmenting it). If the vacation improves over time, people with low segmentation will be more likely to incorporate the trend of the vacation into their judgments, which will cause their overall evaluations to be higher. However, if the vacation deteriorates over time, the prediction is that incorporating the trend into their judgments will cause people to be less satisfied. In such a case, the same people who benefited from incorporating the trend into their judgments in the improving vacation will now suffer from it (causing the people with stronger segmentation to be more satisfied). In addition, if on-line evaluations cause people to naturally segment experiences, then reflecting on one's happiness (on-line evaluations) will provide higher satisfaction when experiences are deteriorating and lower satisfaction when experiences are improving.

Finally, we believe that the level of segmentation is determined not only by the environmental factors of the experience, but that people can access their past experiences in multiple resolutions. Therefore, the time frame that is used to elicit overall evaluations can impact their segmentation. For example, asking one's spouse how their day was could result in a decreased segmentation compared with asking how were their meetings, phone conversations, and Tetris game. As a closing note, it would be interesting to learn how much you liked this paper and whether your overall evaluation was impacted by the change in its quality over time, and by whether you have read it in one sitting or multiple ones.

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