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# The Quasi-acceleration Relation: Satisfaction as a Function of the Change of Velocity of Outcome over Time

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Satisfaction with a dynamic outcome is positively related to its value, the change in the value, and the rate of change. Proposed in this article is another outcome–satisfaction relation: Satisfaction is positively related to the change in the rate, or quasi-acceleration (QA). We tested this proposition (a) in a direct comparison paradigm where Ss compared pairs of hypothetical academic or investment values of different QAs unfolding graphically on the computer (Experiment 1) and (b) in a between-subject paradigm where Ss in different QA conditions indicated moment-to-moment feelings about a hypothetical investment value changing numerically on the computer (Experiment 2). In support of the QA relation, Ss in both experiments indicated greater satisfaction the more positive the QA. Limitations of the present research and implications for a relative and temporal perspective on outcome–satisfaction relations are discussed. © 1994 Academic Press, Inc.

Imagine that Mr. H purchased a house as an investment a few years ago, and he checks the value of the house from time to time. What is the relation between the value of the house and his feelings? The answer seems absurdly simple: The more the house is worth, the happier Mr. H will be. This, however, is only a partial answer. Note that the value of a house is neither static nor absolute; it changes over time. To better

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understand Mr. H's feelings, we need to know how his feelings are related to the way the value changes. Below, we first review three relations between feelings and changing outcomes, and then propose the quasi-acceleration relation.

The most self-evident outcome–satisfaction relation is that satisfaction depends on the actual value, or position, of the outcome: The more (less) positive the position, the greater (less) the satisfaction. (In this article, "less positive" can also mean "more negative," and vice versa.) Symbolically, this position relation is

$$S = F_p(P), \tag{1}$$

where $S$ is level of satisfaction, $P$ is the position (actual value) of an outcome, and $F_p$ is a positive function. As for Mr. H, the home owner, position is the (current) value of his house, and the position relation suggests that, other things equal, Mr. H is happier the higher the current value of the house.

Feelings also depend on what we call the displacement of an outcome value, namely, the direction and degree to which the outcome value changes from one point of time to another. The more (less) positive the displacement, the greater (less) the satisfaction (e.g., Aronson & Linder, 1965; Brickman & Campbell, 1971; Brickman, Coates, & Janoff-Bulman, 1978; Carver & Scheier, 1982, 1990; Diener, 1984; Frank & Hutchens, 1988; Frijda, 1988; Kahneman & Tversky, 1979; Loewenstein, 1988; Loewenstein & Sicherman, 1991). For example, subjective well-being depends not just on absolute level of wealth but is positively associated with the current level of wealth relative to some past level of wealth (Brickman & Campbell, 1971). This displacement relation can be expressed as

$$S = F_d(P_1 - P_0), \tag{2}$$

where $F_d$ is a positive function, $P_1$ is the current position, $P_0$ a past reference position, and the difference, $P_1 - P_0$, is what we refer to as displacement. Let us again take Mr. H for example. According to the displacement relation, other things equal, he would feel happier (more unhappy) the greater (less) the current value of the house as compared with its previous value.

In addition, satisfaction also depends on the trend, or velocity, at which the outcome value changes: The more (less) positive the velocity, the greater (less) the satisfaction (Hsee & Abelson, 1991). For example, after watching hypothetical outcomes, such as the value of a stock, standing in a class, or chance to win a game rising or falling on the computer monitor, subjects indicated greater satisfaction (dissatisfaction) the faster the value rose (fell) (Hsee & Abelson, 1991). This velocity relation can be expressed as

$$S = F_v(V), \tag{3}$$

where $V$ denotes velocity and $F_v$ a positive function. In the case of Mr. H, the velocity notion implies that, other things equal, he would feel happier (more unhappy) the faster the value of his house increases (decreases).

In the present research, we go a step further and propose that satisfaction with a desired outcome also depends on the direction and degree to which the velocity of the outcome value changes from one point in time to another: The more (less) positive the change in velocity, the greater (less) the satisfaction. This relation, referred to as the quasi-acceleration relation, can be expressed as

$$S = F_q(V_1 - V_0), \tag{4}$$

where $F_q$ is a positive function, $V_1$ is the current velocity, $V_0$ is a past reference velocity, and their difference, $V_1 - V_0$, is called quasi-acceleration, or QA. In respect to Mr. H, the QA relation suggests that, other things equal, he would feel happier (more unhappy) the greater (less) the current rate of increase as compared with the past rate.

Before discussing our experiments, we offer a few clarifications. First, QA depends only on the relative values of $V_0$ and $V_1$, not on their absolute values. QA can be positive or negative regardless of the sign of either velocity. In particular, QA can be positive (a) when both $V_0$ and $V_1$ are positive (as long as $V_1$ is more positive), for example, when the value of an investment first increases at a slow rate and then at a faster rate, (b) when both $V_0$ and $V_1$ are negative (as long as $V_0$ is more negative), for example, when the value of an investment first decreases at a rapid rate and then at a slower rate, or (c) when $V_0$ is negative and $V_1$ positive, for example, when the value of an investment first decreases and then increases. The reverse relations are true for negative QAs.

Second, just as displacement is not velocity, QA is not acceleration. Just as velocity is the quotient of displacement over time, (true) acceleration is the quotient of QA over time, namely, $(V_1 - V_0)/(T_1 - T_0)$. This research is limited to quasi-acceleration; so far we do not have sufficient evidence to draw a relation between (true) acceleration and satisfaction.

Third, the QA relation resembles a similar notion in Carver and Scheier's (1990) control process theory. According to that theory, affect depends on the velocity at which one moves toward a goal. If the velocity is faster (slower) than what one expects, positive (negative) affect follows. In addition, if the velocity changes, then acceleration (and QA) will result. If the change is positive, then affect moves toward the positive direction, resulting in "exhilaration" (p. 24). If the change is negative, then affect shifts toward the negative direction, resulting in "deexhilaration." Thus, affect is a function not only of velocity, but also of the change in velocity.

Finally, the QA relation is a variation of the displacement relation. Both the displacement and the QA relations regard satisfaction as dependent on the change, or displacement, of some value. The difference is that for the displacement relation, the value is the outcome per se, and for the QA relation, the value is the velocity of the outcome. As we know, in many situations, the velocity of a desired outcome can be perceived as a desired value in its own right. For instance, stock investors are not just concerned with the actual stock price, but also with the trend or velocity of the price. Thus, the QA relation is just the displacement relation insofar as the velocity of an outcome represents an outcome per se. This analysis can be viewed as a logical deduction of the QA relation from the displacement relation. Below we report two studies that tested the QA relation empirically.

## EXPERIMENT 1

In this experiment, we tested the QA relation by asking subjects to watch a pair of curves (representing either investment or academic performance) unfolding dynamically on the computer, and at the end to indicate their relative feelings about the two curves. The curves involved different QAs; there were six trials.

### Method

#### *Materials*

The experiment was conducted on a personal computer with a color monitor. The monitor screen was divided into left and right windows. In each window, the ordinate indicated the magnitude of a desired value—either the percentile standing in an academic program or the value of a bond; the abscissa indicated time in months (see Fig. 1). During the experiment, two curves, one in each window, gradually and simultaneously unfolded from left to right to portray the change of the value over time. At the end of the display (after the curves were fully unfolded on the screen), the computer prompted the subjects to press a number between 1 and 7 on the keyboard, smaller numbers indicating being more pleased with the change in the left case and greater numbers indicating being more pleased with that in the right case.

The stimuli of the experiment were six pairs of curves, as roughly illustrated in Fig. 2. These six pairs represented six trials. In each trial, one pair of curves were respectively presented in the two windows of the screen, as described earlier. In each pair, the two curves always had identical starting points and identical final points, hence also having identical overall velocity and identical displacement. The difference existed between their QAs. For Pairs 1–3, the QAs in the right curves were always relatively more positive than those in the correseponding left curves, and, in Pairs 4–6, the QAs in the left curves were always relatively more positive (see Fig. 2).

The reason why we included multiple trials was to assure some diversity. Note that the six pairs covered all combinations of positive and negative QAs: in Pair 1, both curves involved negative QAs; in Pair 4, both involved positive QAs; in Pairs 2–3, the left curves involved negative QAs and the right positive QAs; and in Pairs 5–6, the left curves involved

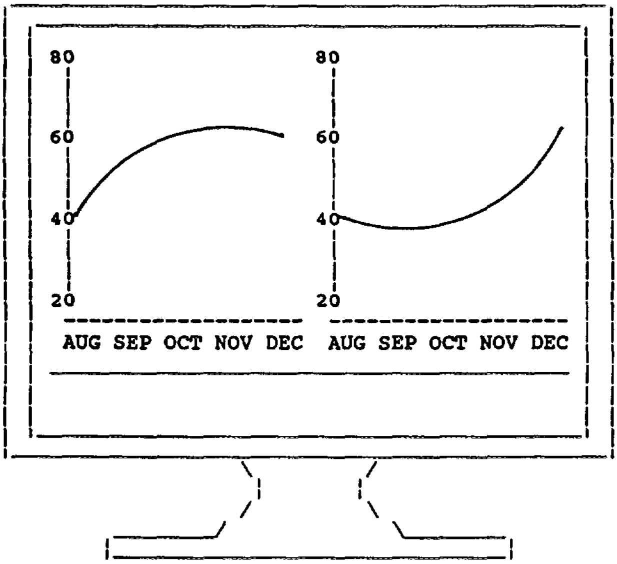


FIG. 1. Layout of the computer screen in Experiment 1.

positive QAs and the right curve negative QAs. In addition, the displacement and overall velocity of the two curves in Pairs 1–3 were all positive and those in Pairs 4–6 were all negative.

## *Predictions*

As mentioned previously, we regarded these six pairs of curves as six separate trials and we were interested in subjects' comparative feelings within every pair, not across pairs. Based on the hypothesized QA relation, we predicted that, for Pairs 1–3, subjects would be more pleased with the right curves, and, for Pairs 4–6, they would be more pleased with the left curves.

## *Subjects*

Subjects were 62 graduate and undergraduate students from Yale University who participated in the experiment as part of a multiple-experiment session for a cash payment of at least $5.00.

## *Procedure*

During the experiment, each subject received detailed written instructions contained in an instruction booklet and worked individually on a personal computer. The instruction booklet had two versions. In one, the stimulus value was the value of a hypothetical bond, and in the other, the value was percentile standing in a hypothetical academic program. Subjects were assigned randomly to one version or the other. Consider the academic version for example. Subjects were instructed to imagine that they had enrolled in two 1-year programs at the beginning of last year, that they were very concerned with their standings in the programs, that the curves on the screen displayed how their standing in each program changed during its last 5 months—from last August to the end of last December—and that their task was to compare the two cases and indicate their relative feelings at the end of

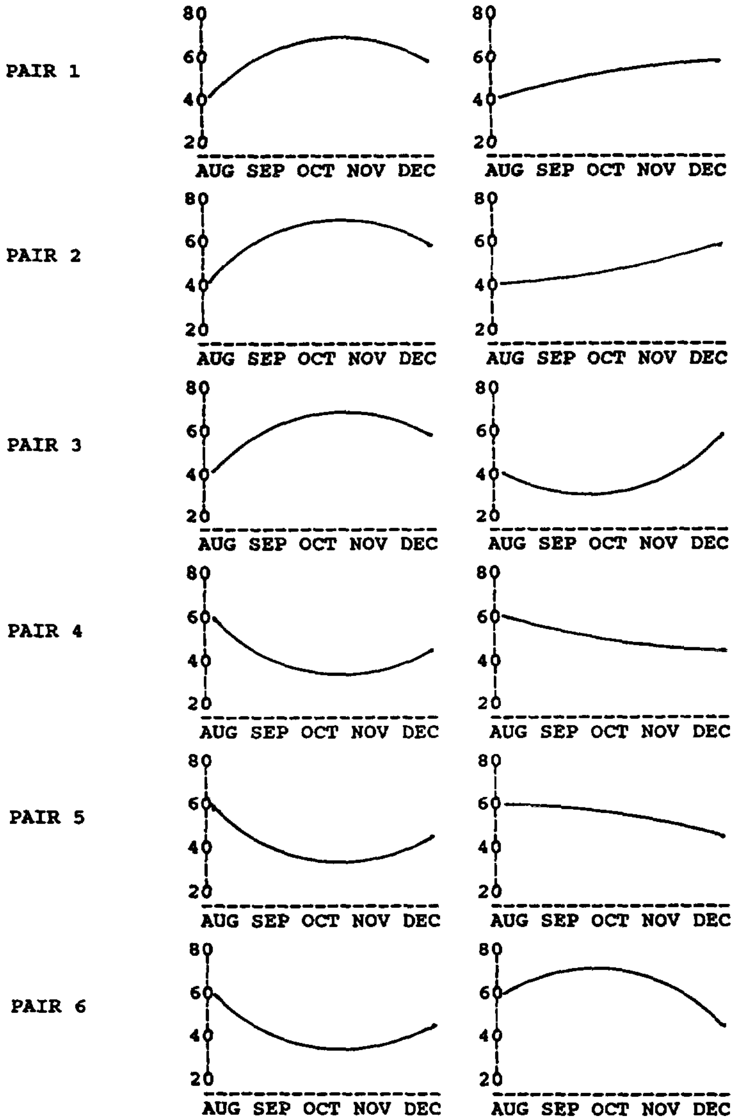


FIG. 2. The six pairs of stimulus curves in Experiment 1.

the display. Subjects were also told that they would repeat the procedure in several trials and that each trial involved a different pair of curves, representing a different pair of programs that were unrelated to the others.

To prevent subjects from wasting time looking for nonexistent differences in final standing or in displacement between the two programs, we told them in the instructions that the final standings and the amounts of change in standing were identical in the two programs, and that therefore they should base comparison not on final standing or on amount of

TABLE 1
RESPONSES TO THE SIX PAIRS OF CURVES IN EXPERIMENT 1

| | | Rating | | | | |
|---|---|---|---|---|---|---|
| Trial | QA | Overall | (Class | Bond) | $t$ | $p<$ |
| 1 | Right > left | 4.61 | (4.87 | 4.35) | 2.72 | .01 |
| 2 | Right > left | 5.16 | (5.48 | 4.84) | 5.35 | .0001 |
| 3 | Right > left | 5.08 | (5.12 | 5.03) | 4.24 | .0001 |
| 4 | Left > right | 3.32 | (2.93 | 3.70) | −3.52 | .001 |
| 5 | Left > right | 3.34 | (3.25 | 3.42) | −3.92 | .0001 |
| 6 | Left > right | 3.46 | (3.41 | 3.51) | −2.94 | .005 |

*Note.* Ratings were made on a 7-point scale, greater numbers indicating greater pleasure with the right curve. The $t$ values were from one group $t$ tests (including both versions) with 4 as the expected mean.

change, but on the way in which the standings changed. The instruction booklet contained a pair of printed graphs to familiarize subjects with the layout. Following the instructions, subjects worked on the six trials, each containing one of the six pairs of stimulus curves. The six pairs of curves were presented in two random orders. Subjects were fully debriefed at the end of the session.

## Results and Discussion

Recall that our predictions were that in Pairs 1–3 where the right curves involved the more positive QAs, subjects would rate the right curves as more positive, and in Pairs 4–6 where the left curves involved the more positive QAs, subjects would rate the left curves as more positive. To test the prediction, for each of the six trials, we performed a one-group $t$ test using the midpoint of the scale (4.0) as the expected mean. Table 1 summarizes the mean ratings and the corresponding $t$ values. In support of the predictions, the ratings in Pairs 1–3 were systematically in favor of the right curves, and in Pairs 4–6 the ratings were systematically in favor of the left curves. Neither order nor version of the stimulus curves had a significant effect in any of the six pairs, except that in Pair 4 the rating in the academic version was lower than that in the investment version ($F(1, 58) = 4.18, p < .05$).

These results supported the hypothesized QA relation, suggesting that people feel more positive the more positive the QA. Also, the results suggested that the QA relation is rather robust: Across the six trials, the displacements and overall velocities in some pairs (Pairs 1–3) were negative and in others (Pairs 4–6) were positive, and the QAs in some pairs (Pairs 1 and 4) were of the same direction and in others (the other pairs) were of the opposite directions. Despite the diversities among these trials, subjects systematically rated more positively the curve involving the more positive QA. It appears that the QA relation holds regardless of the absolute direction of displacement or overall velocity and regardless of whether the QAs in comparison are of the same direction.

Two clarifications are in order here. First, in the instructions, subjects were told explicitly to base their comparisons on the way the stimulus value changed. These instructions may be criticized as involving demand. However, this research is primarily concerned with the "quality" of the QA relation—whether satisfaction is positively related to QA—and not with the "quantity" of the relation—how strong the QA effect is relative to other effects. Although these instructions may have directed subjects' attention more to the QA manipulation and hence enhanced the "signal to noise ratio" for the QA effect, the instructions would not have influenced the quality or direction of the effect.

Second, for every pair of stimulus curves in this experiment, the curve with the more positive QA always entailed the more positive final velocity (which was inevitable in order to keep the overall velocities identical). One may consider this as a confounding factor. However, the curve with the more positive QA always involved the less positive initial velocity. Furthermore, subjects were told explicitly that the end of a curve was also the end of the entire event (investment or academic program), and so final velocity had no predictability for future outcomes and was unimportant. (If anything, subjects might have felt more disappointed with the curve with a more positive final velocity because it was terminated "too early.") For further assurance that final velocity was not a confounding factor, one change made in Experiment 2 was that the final velocities of the stimuli to be compared were identical (see below for details).

## EXPERIMENT 2

The purpose of this experiment was to test the QA relation by using procedures very different from those used in Experiment 1. There were several major differences. First, instead of using a direct comparison paradigm, this experiment employed a between-subject paradigm where different subjects were exposed to different QAs. Second, instead of responding only once at the end of a display, subjects in this experiment responded continuously throughout a display. Third, instead of being presented graphically, the stimuli in this experiment were presented numerically. We thought that these procedures were by and large more consistent with reality and more natural for the subjects than those used in Experiment 1. In addition, the stimuli to be compared in this experiment had identical final velocities. Control of final velocities was more important in this experiment than in Experiment 1, because, as to be explained later, we were interested primarily in subjects' responses at the final stage of a display. Subjects watched a hypothetical investment value changing numerically on the computer and indicated feelings continuously during

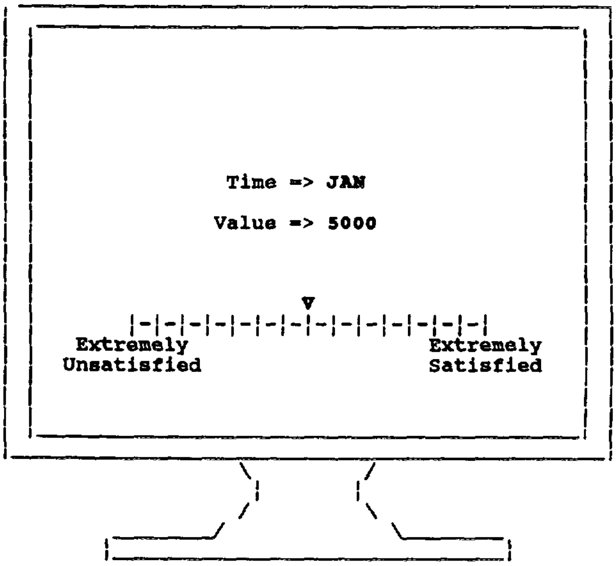


FIG. 3. Layout of the computer screen in Experiment 2.

the display. The patterns in which the value changed involved different QAs for different groups of subjects.

## Method

### *Materials*

The experiment was conducted on a personal computer with a color monitor as shown in Fig. 3. At the center of the screen was a four-digit number representing the current value of a hypothetical stock. During the display, the number changed unit by unit to indicate the dynamic performance of the stock. Above the number was the corresponding month, ranging from January to March. Below the number was an unnumbered 15-point scale, with its left end labeled "Extremely Unsatisfied" and its right end "Extremely Satisfied." Above the scale was a pointer. At the beginning of each display, the pointer was located at the center of the scale. During the display, the subjects could press specified keys to move the pointer left or right along the scale to indicate their moment-to-moment feelings.

Each display lasted approximately 45 s with about every 15 s representing each month. In a display, the four-digit number changed following one of eight different patterns, which are illustrated graphically in Fig. 4. These eight patterns constituted the main stimuli of this experiment. As the figure illustrates, for Patterns 1 and 2, the last segments (approximately in the month of March) were identical—both in position and in velocity; however, the initial segment of Pattern 1 had a less positive velocity and that of Pattern 2 a more positive velocity. As a result, Pattern 1 entailed a positive QA and Pattern 2 a negative QA. Patterns 3 and 4 were mirror images of Patterns 1 and 2, respectively, and, as such, Pattern 3 entailed a negative QA and Pattern 4 a positive QA. Patterns 5–8 were replicas of Patterns 1–4, respectively, except that they each had a higher overall position. For example, instead of starting from about 4994 in Pattern 1, Pattern 5 started from about 7648. These eight patterns could be grouped into four pairs: Patterns 1 and 2, Patterns 3 and 4, Patterns 5

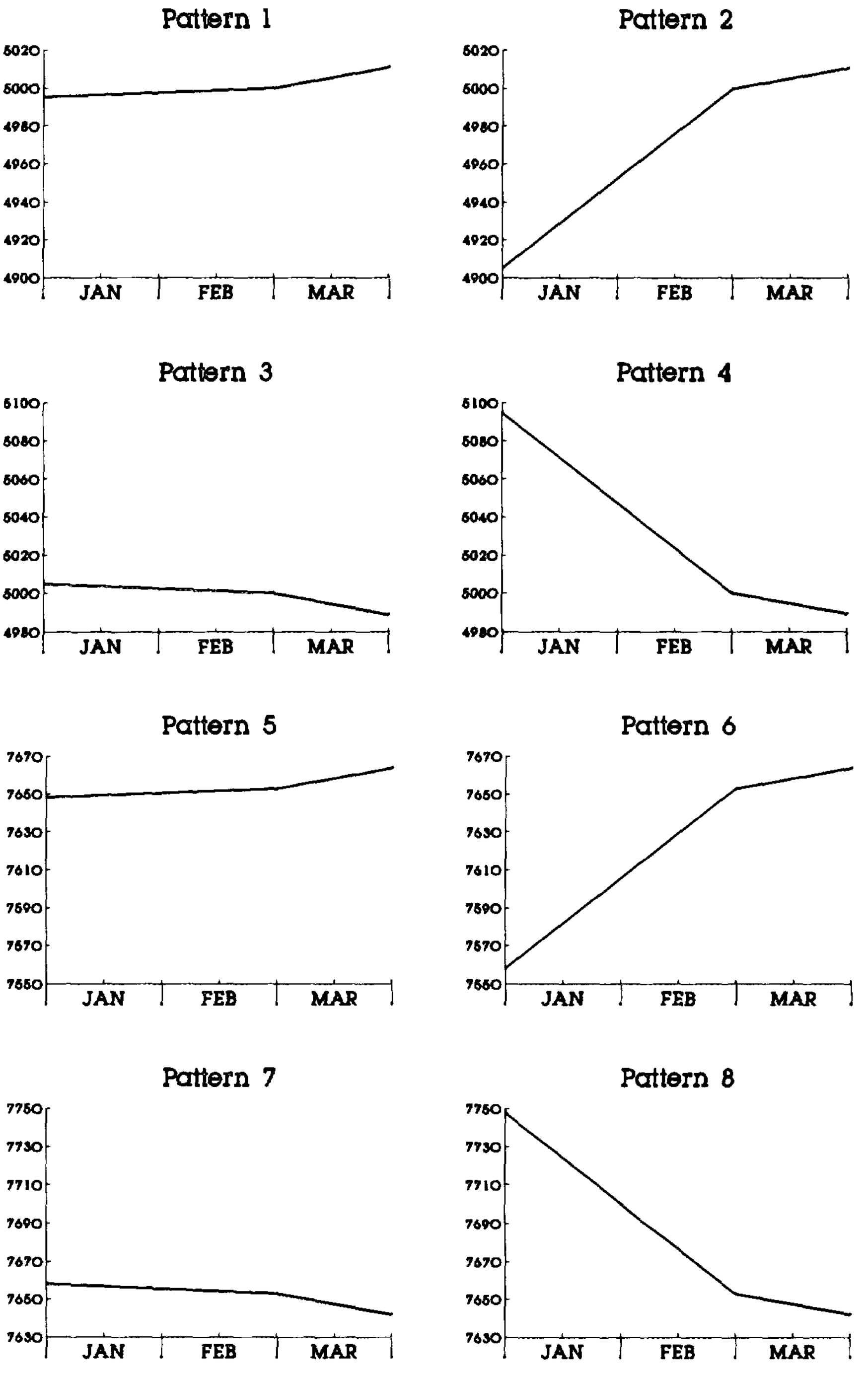


FIG. 4. The eight stimulus patterns in Experiment 2.

and 6, and Patterns 7 and 8. Each pair of patterns shared identical final velocities and identical final positions but involved different QAs.

### *Predictions*

Although we assessed subjects' responses throughout the entire display of a stimulus, we were interested primarily in their responses at the final stage, because it was at that stage where the QA manipulation (i.e., changes in the trend) had been introduced. In addition, we were only interested in comparing patterns that had identical velocities and identical positions at the final stage, namely, Pattern 1 versus 2, Pattern 5 versus 6, Pattern 3 versus 4, and Patterns 7 versus 8. Based upon the hypothesized QA relation, we predicted that at the end of displays subjects would respond more positively to Pattern 1 than to Pattern 2, to Pattern 5 than to Pattern 6, to Pattern 4 than to Pattern 3, and to Pattern 8 than to Pattern 7.

### *Subjects*

Subjects were 163 undergraduate students from Yale University who participated in the experiment as part of a course requirement. Subjects were assigned randomly to one of four groups. One group worked on Patterns 1 and 5, one on Patterns 2 and 6, one on Patterns 3 and 7, and one on Patterns 4 and 8. In other words, each group of subjects worked on two patterns, the first being one of the first four patterns (e.g., Pattern 1), and the second being its corresponding "replica" pattern (e.g., Pattern 5). Thus, any two patterns compared later (such as Patterns 1 and 2) were assigned to two different groups of subjects; hence the comparison was between-subject.

### *Procedure*

During the experiment, every subject received written instructions contained in an instruction booklet and worked individually on a personal computer. Subjects were asked to suppose that they had invested money in a stock some years earlier. They were told that the computer would show them the value of the investment over a 3-month period, from January to March, and their task was to indicate moment-to-moment feelings during the display by moving the pointer on the screen along the given scale. To enhance the signal-to-noise ratio for the QA effect, we also told subjects in the instructions that the value of stock may rise (or fall) at a varying pace, that the value in the displays would always rise (or fall) but would do so at a varying pace, and that they should not only pay attention to whether the value rose or fell but also to the pace of change. Having read the instructions, subjects worked on the first pattern. Following that, they were instructed to complete a filler questionnaire, whose purpose was to minimize carry-over effects. After that, they were directed to work on the second pattern, which was said to represent a different stock. Subjects were debriefed at the end of the session.

## Results and Discussion

The four graphs in Fig. 5 depict subjects' responses to the four pairs of patterns, respectively. As seen in the graphs, until the introduction of the QA manipulation approximately at the beginning of March, there was a considerable gap between responses for the two patterns in each pair. This was a result of the velocity/displacement effect: Take Fig. 5a for example. At any point during January and February, the velocity and the displacement in the pattern that had the more positive QA (i.e., Pattern 1) were less positive than those in the other pattern (i.e., Pattern 2).

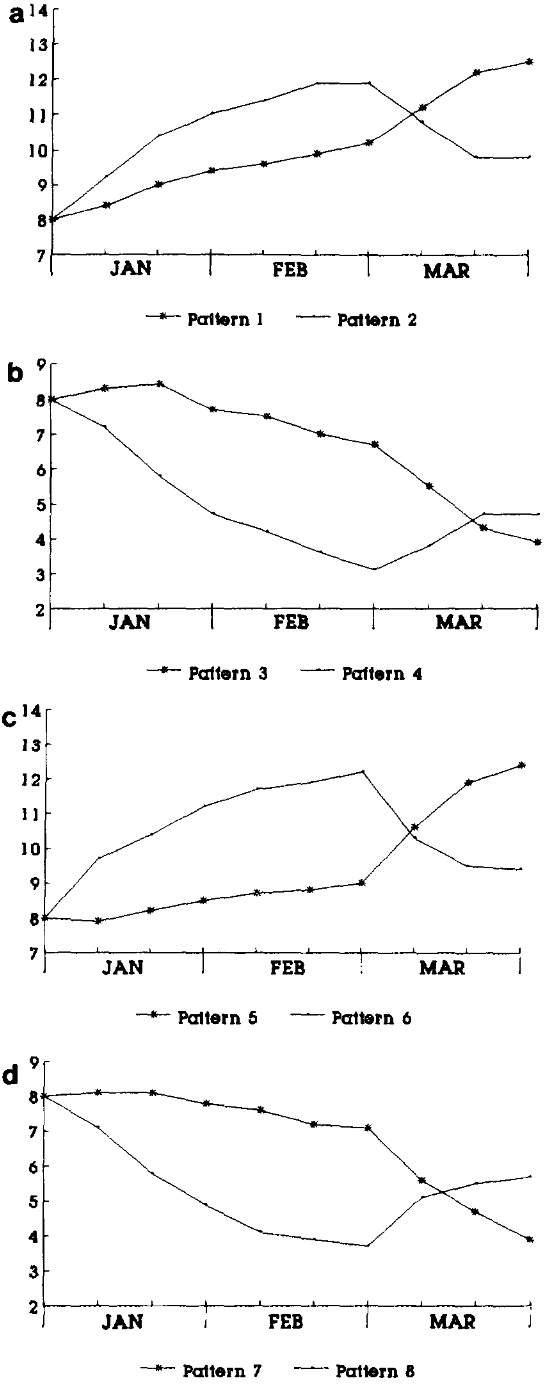


FIG. 5. Responses to the eight patterns in Experiment 2.

Consistent with the velocity and the displacement relations, responses to Pattern 1 were accordingly less positive than those to Pattern 2, hence creating the gap.

More interestingly, with the introduction of the QA manipulation, the gap suddenly narrowed and eventually gave way to the reverse direction. Recall that we were interested in subjects' responses at the end of the displays and we predicted that responses would be more positive to Pattern 1 than to Pattern 2, to Pattern 5 than to Pattern 6, to Pattern 4 than to Pattern 3, and to Pattern 8 than to Pattern 7. To test the predictions, we used a $t$ test to compare the final responses between each pair of patterns. As predicted, the final rating for Pattern 1 was significantly more positive than that for Pattern 2 ($t = 4.52$, $p < .0001$), and that for Pattern 5 was significantly more positive than that for Pattern 6 ($t = 4.88$, $p < .0001$). Similarly, the final rating for Pattern 4 was more positive than that for Pattern 3, although the difference was not significant ($t = 1.41$, $p = .17$), and the final rating for Pattern 8 was more positive than that for Pattern 7, and the difference was significant ($t = 3.32$, $p < .0025$).

The present experiment lent additional support to the proposed QA relation. As compared with Experiment 1, this experiment utilized a relatively indirect approach by testing the QA relation in a between-subject design, thereby preventing subjects from realizing the difference in QA of paired stimuli. Second, the present experiment allowed subjects to respond continuously and instantaneously; such responses were probably more natural and more spontaneous than isolated responses elicited only at the end of a display. Third, the stimulus value in this experiment was presented numerically rather than graphically so that subjects could not interpret QA on the basis of visible geometrical patterns. In addition, the stimulus patterns that were compared in this experiment always had identical final position and identical final velocity, so that the result could not have been attributed to other factors than QA. The fact that the results of both experiments were consistent with the QA relation despite their methodological differences gives us further confidence about the reliability of the QA relation.

## GENERAL DISCUSSION

The hypothesis guiding this research is that one's feelings are positively related to the change in velocity of a desired outcome value. Results of the two experiments reported in this article have supported this QA relation. Although the events covered in the experiments (academic standing and bond investment in Experiment 1 and stock investment in Experiment 2) were rather limited, one can associate the QA relation with many other events not studied explicitly in this research. For instance, basketball fans will be excited if the team they support is losing in the first half and then gradually catches up; this is an example of a positive

QA. Conversely, a fisherman will be upset if a large fish first approaches and then swims away; this is an example of a negative QA. Also, the mayor of an economically troubled city will be happy if the budget deficit of the city first worsens at a rapid rate but then at a much slower rate; this is another example of a positive QA, although the general trend is always negative. Conversely, the parents of a talented child will be unhappy if the child first makes rapid progress at school but then makes much slower progress; this is another example of a negative QA, although the general trend is always positive.

Several comments are in order here. First, the present research only demonstrated the hypothesized QA effect and did not explore the psychological process underlying the effect. One possible process is that of adaptation. According to adaptation level theory (Helson, 1964; also cf. Crespi, 1942), an individual who has been exposed to a constant level of stimulation will become insensitive to the level and consequently will respond mainly to change in the level. This process may well explain the displacement relation that affective responses are influenced by change, or displacement, of position. However, this process may also explain the QA relation: Here, the level to which the individual becomes adapted is not the static position, but the rate of change in position, or velocity. An individual who has been exposed to a constant velocity will become adapted to it and consequently will respond mainly to change in the velocity, or quasi-acceleration.

Second, one may wonder whether people have systematic responses to even higher order variables, for example, acceleration, change in acceleration, or the rate of change in acceleration. We do not know the answer, but we feel that exploring such higher order variables may not be especially interesting. Practically, such variables do not have much meaning in the real world; for example, the concept of change in acceleration of a certain investment value may not make much sense to most investors. Methodologically, manipulations of higher order variables (e.g., change in acceleration) inevitably affect lower order variables (e.g., velocity and quasi-acceleration), and it becomes increasingly difficult to tease apart the effects of these different variables the higher order the variables are.

Finally, although the QA relation is concerned only with the velocity difference of a dynamic outcome between the initial and the final points of a given period, it does not imply that one's affective responses to the outcome during that period can be determined solely by the velocity difference or QA. Many other factors can influence one's responses. For example, two patterns with identical initial velocities and identical final velocities, and hence identical QA, may induce different affective reactions if the overall position of one pattern is more positive than that of the other, or if one pattern involves dramatic ups and downs during the period and the other does not.

Let us conclude this article by incorporating the QA factor with the other three factors mentioned at the beginning of this article. We propose that satisfaction with a dynamic outcome is jointly determined by all four attributes of the outcome: (a) its actual value or position ($P$), (b) change in its value or displacement ($P_1 - P_0$), (c) rate of change or velocity ($V$), and (d) change in the rate or quasi-acceleration ($V_1 - V_0$).

This model implies a relative and temporal perspective on outcome-satisfaction relations. By relative, we mean that satisfaction is a function not just of the absolute status of an outcome, but of the relative value of its current status compared to some previous status. (Relative value may also mean one's own status compared to other's, but it is beyond the scope of this article to address this kind of relativity.) By temporal, we mean that what we call status here is not just the actual value of the outcome (i.e., position), but also its temporal trend (i.e., velocity). In a certain sense, the four attributes of satisfaction postulated in this article—position, displacement, velocity, and QA—are successive variations of one another, incorporating either the relative or the dynamic feature. Specifically, position ($P$) is the primary attribute; displacement (i.e., $P_1 - P_0$) is a variation of position that incorporates the relative feature; velocity ($V$), which is defined as the quotient of displacement over time, is a variation of displacement that incorporates the temporal feature; QA (i.e., $V_1 - V_0$) is a variation of velocity that incorporates the relative feature, and, for that matter, it is also a variation of position that incorporates both the relative and the temporal features. By proposing that satisfaction depends on all these attributes, we suggest that the link between outcome and satisfaction is not just static or absolute, it is relative and temporal (see Altman & Rogoff, 1987, for a somewhat similar perspective).

This model is far from a complete understanding of the dynamics of outcome–satisfaction relations. We have not included all the factors in a dynamic outcome that can affect feelings; for example, we have not mentioned endowment effects (e.g., Tversky & Griffin, 1991), anticipation effects (e.g., Loewenstein, 1987), duration neglect effects (e.g., Kahneman, Fredrickson, Schreiber, & Redelmeier, in press; Varrey & Kahneman, 1992), or range–frequency effects (e.g., Parducci, 1984; Smith, Diener, & Wedell, 1984). Moreover, we do not know the relative importance of these factors in different situations, and do not know whether they interact with each other. The present research is only an initial step toward understanding the relations between dynamic outcomes and feelings.

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