Intrapersonal and Social Comparison Determinants of Happiness: A Range-Frequency Analysis

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Examined whether intrapersonal comparisons and social comparisons operate in similar ways to determine ratings of happiness. Events were varied to create positively and negatively skewed distributions. The events in each distribution were ascribed to either a single person or a group of people; Ss rated how happy they would feel if they experienced specific events within the distribution. Ratings for both intrapersonal and social comparisons were fit well by Parducci's (1984) range-frequency theory. Individual events received higher ratings when presented within the positively skewed context. Overall happiness, as measured by both the mean of the happiness ratings as well as direct ratings, was highest for the negatively skewed distributions. The effects of skewing were more pronounced for intrapersonal comparisons, but ratings were more closely defined by the range of experimental stimuli for social comparisons.

T. S. Eliot's first marriage was long and uncommonly miserable, but in the last decade of his life he remarried happily. He felt rejuvenated, and all the more so because of a "contrast with the past" (Ackroyd, 1984, p. 326). Eliot's final marital contentment supports judgmental theories of happiness that stress the importance of context in determining a person's subjective experience (Brickman & Campbell, 1971; Diener, 1984; Helson, 1964; Parducci, 1968; Thibaut & Kelley, 1959). According to these relativistic theories, the degree of satisfaction experienced is not determined by the absolute value of an event but rather by its value in relation to other contextual events. Thus, the judged happiness of an event depends on what events it is compared with: The same event can be evaluated positively or negatively depending on its context.

Although all relativistic theories share the assumption that subjective experience is determined by a comparison process, different types of comparison processes yield different implications for judged happiness. For example, in Helson's adaptation-level theory (1947, 1964), the judgment of a particular event is proportional to its deviation from the mean value of all other events, the adaptation level, which itself is assigned a neutral value. One implication of this theory is that the sum of the judgments of experienced pain and pleasure will not depend on the shape of the distribution of events, because the sum of deviations from the mean is zero, a constant (Brickman & Campbell, 1971). Contrary to this prediction, Parducci (1968) has shown that satisfaction judgments depend on the skewness of the distribution of contextual events, even when the means of the distributions are the same. In particular, overall satisfaction, as measured by the mean of satisfaction ratings, was greatest when the distribution of events was negatively skewed. This result is consistent with a range-frequency theory of happiness (Parducci, 1984), according to which happiness of a set of life events is a function of the accumulating distributional shape of a person's previous experiences.

Range-Frequency Model

In early tests of adaptation-level theory, Parducci, Calfee, and Marshall (1960) found that the neutral point of the scale did not correspond to the mean of the contextual events but rather to a compromise between the midpoint and median of the distribution. This finding suggested two principles, a range principle and a frequency principle, that people apply to contextual information in determining their judgments. The range principle reflects a tendency to judge an event in terms of the proportion of the contextual range lying below that event on the specified dimension of judgment. Algebraically, the range value of Stimulus i in Context c is given by

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$$R_{ic} = (S_i - S_{min})/(S_{max} - S_{min}), \quad (1)$$

where S_{min} and S_{max} are the minimum and maximum subjective values considered within a particular context and S_i is the subjective value of Stimulus i. Thus, an event positioned near the top of the range in one distribution will, because of the contrast effect entailed by this principle, evoke greater happiness than the same event positioned near the bottom of the range of another distribution.

The frequency principle reflects a tendency to judge an event in terms of the proportion of the total number of contextual stimuli lying below that event on the specified dimension of judgment. The frequency value is given by

$$F_{ic} = (r_{ic} - 1)/(N_c - 1), \quad (2)$$

where r_{ic} is the rank of Stimulus i in Context c and N_c is the total number of contextual stimuli. Effects on ratings of individual events due to differences in the shape (e.g., skewness) of the distribution result from this principle. For example, by this principle an event could elicit average or even above-average happiness despite its position being low in the range, as long as a high proportion of events in the context are valued more negatively.

The subjective evaluation of an event is represented by a compromise between range and frequency values,

$$J_{ic} = wR_{ic} + (1 - w)F_{ic}, \quad (3)$$

where w is the relative weighting of these principles. In a number of psychophysical judgment studies, the empirically derived value of w was close to 0.5, indicating a roughly equal compromise between range and frequency principles.

Finally, the overt ratings are assumed to be linearly related to the underlying subjective judgment. This relation is expressed algebraically as

$$C_{ic} = bJ_{ic} + a, \quad (4)$$

where b is the range of category ranks (e.g., 10 for an 11-point scale) and a is the number corresponding to the lowest category.

Happiness Derived From Particular Events

The main focus of the range-frequency model has been to explain contextual contrast effects. For distributions that cover the same range, an event will be rated higher in the distribution in which its frequency value is higher. For example, an event will be rated as more satisfying when it occurs in a positively skewed rather than a negatively skewed distribution. These effects of distribution will increase as the weighting of the frequency principle $(1 - w)$ increases. The applicability of the range-frequency model to social judgments has been supported by good fits of the model to ratings on a number of social dimensions, such as happiness of faces (Wedell & Parducci, 1988), or satisfaction with the outcomes of gambles (Marsh & Parducci, 1978; Parducci, 1968), attractiveness (Wedell, Parducci, & Geiselman, 1987), academic performance (Mellers & Birnbaum, 1983; Wedell, Parducci, & Geiselman, 1987), equity judgments of salaries and taxes (Mellers, 1983, 1986), and judgments of psychopathology (Wedell, Parducci, & Lane, 1988).

Overall Happiness

Parducci (1984) has argued for use of a utilitarian conception of overall happiness as the average of separate experiences rather than the more typical use of direct ratings of happiness for life as a whole or over some period of time. He argued that ratings of overall happiness have little meaning unless the context of different lives is well specified and people are assumed to "average" accurately or at least in the same manner. Following Parducci, in this article the term *overall happiness* refers to the utilitarian conception unless otherwise specified.

An implication of the range-frequency model is that as long as w is greater than zero, overall happiness will be proportional to the skewing of the distribution of contextual events. When events are concentrated near the top of the contextual range (negative skewing), a person will be happier in the sense of having a higher mean across all judgments of satisfaction. Conversely, happiness is minimized when events are concentrated near the bottom of the contextual range (positive skewing).

It is important to note that according to the range-frequency model, happiness of individual events and overall happiness operate in an opposing fashion. When the range is equated for positively and negatively skewed distributions, any particular event (except those at the endpoints) will be more satisfying in the positively skewed distribution; however, the negatively skewed distribution will result in greater average happiness because of the high frequency of positive events and the relative infrequency of negative events. Changes in the range-frequency weighting parameter also affect momentary and overall happiness in opposite ways. Because the effects of skewing on ratings of individual events are a result of the frequency principle, these effects are maximized when the frequency weighting is maximal $(1 - w = 1.0)$ and disappear when the frequency principle receives no weight $(1 - w = 0.0)$. However, when the average of the happiness judgments is of central concern, exclusive weighting of the frequency principle will result in a uniform distribution of judgments with a mean at the neutral point of the scale, and thus the effects of skewing will be erased. Because greater overall happiness depends on a higher proportion of happy events, it is maximized when the range principle receives full weight $(1 - w = 0.0)$.

These implications for overall happiness depend on the utilitarian conception. For example, one could argue that an extremely pleasurable experience might outweigh, in the mind of the perceiver, many mediocre experiences and result in a positive overall evaluation even within a positively skewed distribution. Wedell and Parducci (1988) found evidence for this type of positivity weighting on ratings of overall happiness. The present study explores this possibility further by directly comparing ratings of overall happiness with the mean of the happiness ratings.

Intrapersonal Versus Social Comparison Bases of Happiness

Parducci has formulated his theory of happiness primarily within the domain of intrapersonal comparisons, that is, range-frequency principles applied to events experienced or imagined by a person. However, the sources of distributional information can be more varied than an individual's intrapersonal experi-

ence alone (Brickman & Campbell, 1971; Emmons & Diener, 1985; Michalos, 1985; Thibaut & Kelley, 1959). One frequently noted source is social comparisons. Parducci and Wedell (in press) have speculated about how events experienced by others might be included in one's intrapersonal context and, through extension of the range, result in greater or lesser happiness. Although this type of interaction between social and intrapersonal comparisons is intriguing, it seems likely that happiness will also depend on direct comparisons of one's own standing in relation to others (e.g., Brickman & Bulman, 1977).

According to the social comparison predictions, happiness will typically result from being better off than others, especially others who share similar comparison-related attributes (Goethals & Darley, 1977). T. S. Eliot's biography provides an example here as well. In contrast to his married life (intrapersonal comparison), Eliot's professional career was a story of precocious success and long-time preeminence. Simply put, Eliot was better than most other poets of his generation (social comparison), and he admitted to being happy over this fact (Ackroyd, 1984). Clearly, both intrapersonal- and social-comparison-based events contribute to a person's happiness. Consider how an individual might evaluate his or her academic success. According to the range-frequency model, academic satisfaction would be greater if a person's individual grade distribution over time was negatively skewed rather than positively skewed. However, within the social comparison framework, the critical determinant would be how one's grades measured up to those of friends and peers.

Indeed, social comparisons have repeatedly been shown to influence a person's happiness (e.g., Brickman & Bulman, 1977; Gutek, Allen, Tyler, Lau, & Majchrzak, 1983; Michalos, 1985; Smith & Insko, 1987). Emmons and Diener (1985) found that comparisons with others may be the strongest predictors of satisfaction in many areas of life. Given the demonstrated applicability of range-frequency theory to other types of social comparisons (Mellers, 1983, 1986; Mellers & Birnbaum, 1983; Wedell & Parducci, 1988; Wedell et al., 1987) and the fact that people have strikingly accurate conceptions of the true shape of many social distributions (Nisbett & Kunda, 1985), it seems likely that happiness based on social comparisons should also follow a range-frequency compromise.

The implications of the range-frequency model for the social comparison determinants of happiness share the double-edged character described for intrapersonal comparisons. The effects of distributional skewness should depend on whether the focus is on satisfaction for the individual or satisfaction for the group. Thus, for social comparisons, the greatest average satisfaction for the group should be maximized through a negatively skewed distribution. However, this greater average satisfaction should be accompanied by less satisfaction for the individual at any particular position in the range. People at particular positions in the range of a positively skewed distribution should be more satisfied than their counterparts in a negatively skewed distribution.

Overview

The purpose of this study was to test range-frequency predictions for both intrapersonal and social comparisons using domains expressly linked to subjects' happiness. For both types of comparisons, individual events were expected to be more satisfying when rated in the context of a positively skewed distribution; however, the average satisfaction across all events taken together was expected to be greater for the negatively skewed distribution, even when the mean of the event outcomes did not differ from that of the positively skewed distributions. For intrapersonal comparisons, these predictions were also evaluated using direct ratings of overall happiness.

Method

Subjects

Subjects were 158 undergraduates (82 men and 76 women) at the University of Illinois at Urbana-Champaign who participated in partial fulfillment of a course requirement. There were 4–15 subjects per session.

Materials

We selected two comparison domains: test scores and wages in the form of tips. These domains have clear links to the happiness of undergraduate subjects but were different enough from each other for the generality of any findings to be assessed. Each set of stimulus values across the two domains was proportionally equivalent, although the numbers themselves were different for each domain. The same distributions were used for both the intrapersonal and social comparison conditions. However, in the case of intrapersonal comparisons, stimuli were described as representing test scores received by a person over the span of a two-semester course and as tips earned by a person while working at a series of university functions. In the case of social comparisons, stimuli were described as representing test scores received by a class on a midterm exam and as tips earned by a group of students at a university function.

For each domain, we constructed three distributions: a positively skewed, low mean (PL) distribution; a negatively skewed, high mean (NH) distribution; and a negatively skewed, low mean (NL) distribution. The mean was prominently displayed for each distribution. Figure 1 presents the distributions used for test scores. The stimuli, numbered 1–6 in Figure 1, were judged by the subjects.

Procedure

Subjects were told that they would be examining a set of events within a distribution. The distribution was described as consisting of events that could have happened to them personally or events happening to a group of students like themselves. In the case of intrapersonal events, subjects were asked to consider one event at a time within the distribution and to indicate how satisfied they would be with this event given all the other events they had supposedly experienced. In the case of social distributions, they were also asked to consider one event at a time and to indicate how satisfied they would be with this event, given all the other events received by the group.

In both intrapersonal comparison and social comparison conditions, subjects judged six designated events on an 11-point scale that ranged from 1 (*totally dissatisfied*) to 11 (*totally satisfied*). Each judged event was presented on a separate page and highlighted in yellow. Subjects were instructed to examine each distribution and event carefully before making their judgments and moving to the next page. Although they were cautioned to avoid making the judgments hastily, it was made clear at the same time that laboring over each judgment was unnecessary. In intrapersonal comparison conditions, subjects also indicated how satisfied they would be with all the events experienced.

When the questionnaire containing the first set was complete, it was collected. The questionnaire containing the second set was then distributed and introduced as a separate experiment. Both the stimulus domain and type of comparison were altered in the second set. For example, if in the first set subjects evaluated test scores in intrapersonal distributions, their second set consisted of tips earned by a group of people (social comparisons). The distribution (PL, NH, or NL) was always the same across the two sets in an effort to avoid possible transfer effects. Order of presentation of domain, type of comparison, and stimulus values was randomized, as was the assignment to different distributions.

Design

We used a 2 (comparison: intrapersonal and social) × 3 (distribution: PL, NH, or NL) × 6 (target event: six events equally spaced across the range) factorial design with distribution as the only between-subjects variable. As there were no effects for order, sex, or domain, these variables were not included in any analysis.

To statistically test the crucial predictions of the range-frequency model, we broke the full design into separate analyses. Comparison of the PL and NH distributions provided a strong test for individual target events (because the distributions spanned the same range) but a weak test for overall satisfaction (because the means differed between distributions). Alternatively, comparison of PL and NL distributions provided a weak test for individual target events (because they had different numerical values, although similar locations within the range) but a strong test for overall satisfaction (because the NL distribution was predicted to promote greater average happiness even though its range was lower than and its mean was the same as the PL distribution). The dependent variable for the statistical analyses was the rating of each target event, the mean of the ratings for the six target events, or the overall rating of satisfaction.

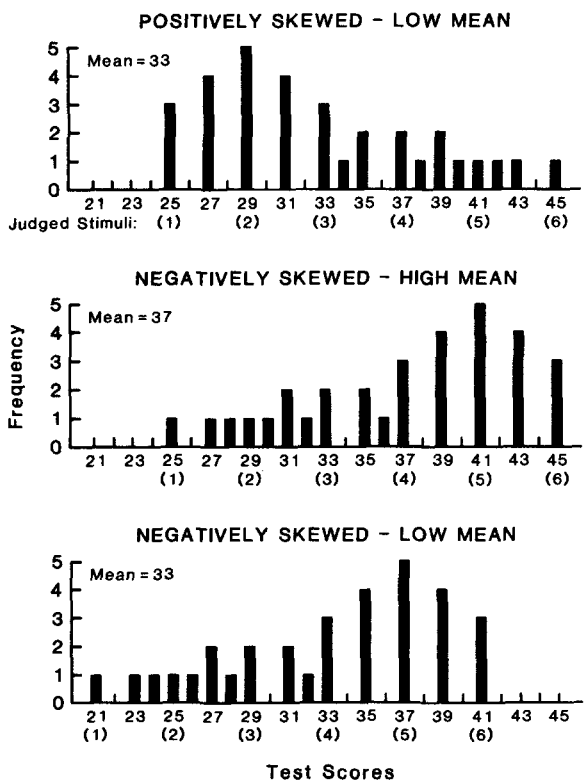

Figure 1. Distributions of scores.

Results

The top panels of Figure 2 plot the mean satisfaction ratings of the target events for PL and NH distributions under intrapersonal and social comparison conditions. The differences between the two rating functions in each of the top panels reveal the expected effects of skewing: Rated satisfaction of target events is greater when the distribution is positively skewed. However, the effects of skewing are greater for intrapersonal comparisons than for social comparisons. Means of the satisfaction ratings for the NL distributions (not shown) were virtually the same as those for the NH distribution (the mean of the absolute differences between means for the two distributions was only 0.11 on an 11-point scale—a nonsignificant difference).

Ratings of Individual Events

The statistical analysis of the effects of skewing and type of comparison on ratings of individual events is most pertinent for the PL and NH distributions because these share the same range. Therefore, we performed a 2 × 2 × 6 analysis of variance (ANOVA) on the satisfaction ratings of the six target events. The main effect of distribution was highly significant, $F(1, 118) = 166.10$, $p < .001$, reflecting the strong contextual contrast in these data. A significant Distribution × Target Events interaction, $F(5, 589) = 12.35$, $p < .001$, supports predictions of the range-frequency model that contrast effects for these distributions would be greatest for the middle stimuli. However, the effects of the contextual manipulation were greater for intrapersonal comparisons than for social comparisons, as indicated by the significant Comparison × Distribution interaction, $F(1, 118) = 6.06$, $p < .05$. These results were replicated in a 2 × 2 × 6 ANOVA performed on the satisfaction ratings for PL and NL distributions, although the Comparison × Distribution interaction did not achieve statistical significance, $F(1, 122) = 2.40$, $p > .05$.

Overall Satisfaction

One measure of overall happiness used for both intrapersonal and social comparisons was the weighted mean of the ratings of all the different events: Because subjects rated only six different stimulus values, ratings for the nine unrated values were estimated by linear interpolation. In addition, subjects' overall ratings of the distribution in the intrapersonal comparison condition served as a second measure of overall happiness. These measures are shown in Table 1. As entailed by range-frequency theory, overall happiness as measured by the mean of the ratings for all experiences was greater for the negatively skewed distribution, even when the mean of the stimulus values was the same as that of the positively skewed distribution in the intrapersonal case (i.e., PL vs. NL). Because the effects of distribution on ratings of individual events were smaller for social comparisons, range-frequency theory predicts the difference in overall happiness will be greater. The data are consistent with this prediction. Finally, subjects' overt ratings of overall happiness for intrapersonal comparisons follow the same pattern as the mean of the

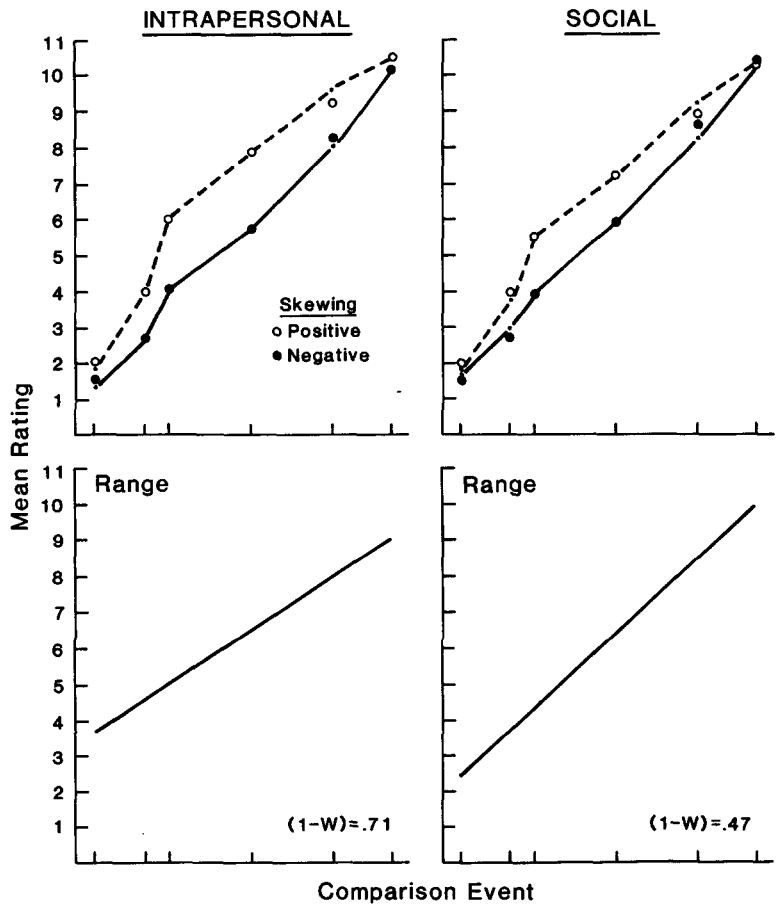

Figure 2. Fit of the range-frequency model to ratings of satisfaction.

individual ratings. For both PL versus NH and PL versus NL, negative skewing led to significantly greater rated happiness compared with positive skewing. However, consistent with previous research (Wedell & Parducci, 1988), there is some suggestion that positively evaluated events receive greater weighting. Although the mean of the event ratings for the positively skewed distribution is well below 6.0, the neutral point of the scale, subjects' overall ratings of this distribution are only slightly above 6.0.

Fit of the Range-Frequency Model

To fit the range-frequency model to the data, we first estimated frequency values of the target events for PL and NH distributions using Equation 2. Because the two distributions share the same range, range values of the target events were assumed to be independent of skewing. Thus, for each target event, $1 - w$ was estimated by

$$1 - w = (J_{i+} - J_{i-})/(F_{i+} - F_{i-}), \quad (5)$$

where + and − indicate positively and negatively skewed distributions, respectively. A weighted average of the estimates for target events was then used to calculate a single estimate of $1 - w$ for each comparison condition (in which each estimate was weighted by the difference in frequency values for that target event).

We then substituted mean ratings (linearly transformed to a 0-to-1 scale using Equation 4), frequency values, and the estimate of w into Equation 3 to solve for range values. The four conditions (Comparison × Distribution) yield four estimates of

Table 1
Effects of Distribution on Measures of Overall Happiness

Comparison	Distribution		
	PL	NH	NL
Intrapersonal			
Mean rating overall	6.13_a	6.69_b	6.72_b
Mean of event ratings	5.88_a	6.28_b	6.41_b
Social			
Mean of event ratings	5.58_a	6.41_b	6.32_b

Note. Ratings were made on a scale ranging from 1 to 11 with higher numbers indicating greater happiness. Within each row, mean ratings not sharing a common subscript differ at $p < .05$ by a t test. PL = positively skewed, low mean; NH = negatively skewed, high mean; NL = negatively skewed, low mean.

the range value of each target event. These were averaged together, with the difference in the mean range values assumed to be proportional to the difference in scale values (S_is of Equation 1) of the target stimuli (reflected in the spacing of stimuli along the abscissa in Figure 2). Because range values are assumed to be independent of skewing and to be linearly related to scale values, we then calculated range functions for intrapersonal and social comparison conditions by linearly regressing the estimates of the range values onto the scale values (mean range values). The range-frequency predictions were then generated by substituting w, range values, and frequency values into Equation 3.

The top two panels of Figure 2 show the fit of the range-frequency model, and the bottom two panels show the inferred range functions and estimates of $1 - w$. The higher value of $1 - w$ for intrapersonal comparisons reflects the greater effects of skewing on ratings of intrapersonal events. However, the range function is less steep for intrapersonal comparisons, indicating a corresponding greater tendency to extend the range of possible events beyond the range of events presented in the experimental set. Finally, the close adherence of theoretical to empirical points indicates that the range-frequency model provides a good description of the data.

Discussion

The model's good fit to ratings of satisfaction suggests that range-frequency principles apply whether stimulus values are presented as different past events experienced by a single person (intrapersonal comparisons) or as events experienced by different people (social comparisons). Although it should be emphasized that subjects did not actually experience the events but rather were asked to rate events within hypothetical distributions, the results for intrapersonal comparisons, for example, replicate previous work (Marsh & Parducci, 1978; Parducci, 1968; Wedell & Parducci, 1988), much of which has involved responses to actual events. Consistent with previous work, overall happiness as measured by the average of subjective experiences and by direct ratings is maximized by a negatively skewed distribution, despite the greater satisfaction of an event when experienced in a positively skewed distribution. The present study extends these conclusions to happiness judgments based on social comparisons.

An unexpected result of the present study was the greater weighting of the frequency principle for intrapersonal comparisons. Although this high weighting ($1 - w = .71$) means greater contextual contrast (owing to differences in frequency values) for specific events, it also means that the effects of skewing the distribution of events have less impact on overall happiness (e.g., when $1 - w = 1.0$, distribution should have no effect). It is possible that the greater frequency weighting for intrapersonal comparisons reflects a type of safeguard against unhappiness, with the pleasurable and painful events tending to balance out regardless of the distributional frequencies. A second unexpected finding was the greater extension of the subjective range beyond the range of presented events for intrapersonal comparisons. It may be that when events are attributed to different people, it seems likely that the observed events are more representative of the range of possible events than when the events are attributed to just one person. However, interpretation of both of these effects is speculative.

Intrapersonal Comparisons

In general, the results for intrapersonal comparisons are consistent with Parducci's analysis of distributional factors contributing to happiness judgments. Parducci (1984) suggested that the highly pleasing events in a positively skewed distribution should be given up because, through upward extension of the range, they depress satisfaction with the much more frequently experienced events in the lower contextual range. If these highly pleasing events are never a part of a person's experience, a larger proportion of experienced events will be greater in judged value, leading to greater happiness. Parducci also suggested that the few highly unpleasant events contained within the negatively skewed distribution may actually contribute to greater average happiness. These events amplify, through downward extension of the range, the satisfaction derived from the more positive events composing the larger portion of this distribution. The present results support the assertion of range-frequency theory that structuring one's life so that experiences are negatively skewed should lead to greater happiness.

Although both of Parducci's suggestions are directed toward this aim of creating a negatively skewed distribution of experiences, they appear to be counter to strategies that people typically pursue. A general hedonistic rule is to seek what is most pleasing and avoid what is most displeasing. However, this is just the opposite of the strategy outlined by Parducci for creating a negatively skewed distribution (personal communication, April 7, 1988). A study by Brickman (1975) confirms this dilemma. When subjects were asked to distribute a hypothetical budget of $120 over a 24-day period, most preferred to spend below-average amounts on most days so that on a few days they could spend with great abandon (a positively skewed distribution). In fact, no subject preferred to spend above-average amounts on most days while suffering on a few days (a negatively skewed distribution). However, in a separate experiment in which subjects judged the overall satisfaction of either positively or negatively skewed budgets, the negatively skewed distribution yielded the highest average judgment. Similarly, Parducci has developed a computer game in which the happiness associated with various events is determined by a range-frequency compromise. Although the maximum (happiness) score is achieved by selecting events so as to create a negatively skewed distribution, players rarely achieve a positive score even after many practice trials.[1]

How can we reconcile the finding that average judgments of happiness are higher for negatively skewed distributions, but individuals tend to choose a strategy that leads to a positively skewed distribution? Consider the simplified version of Brickman's budget problem shown in Figure 3. Two budgets are presented in which $30 is distributed over 10 days. In the negatively

[1] In the present example the temporal distribution of outcomes is not considered. There may well be a preference for piling up pleasures at the beginning (primacy effect) or end (recency effect) of the sequence, but it is assumed these temporal effects operate independently of effects of the frequency distribution.

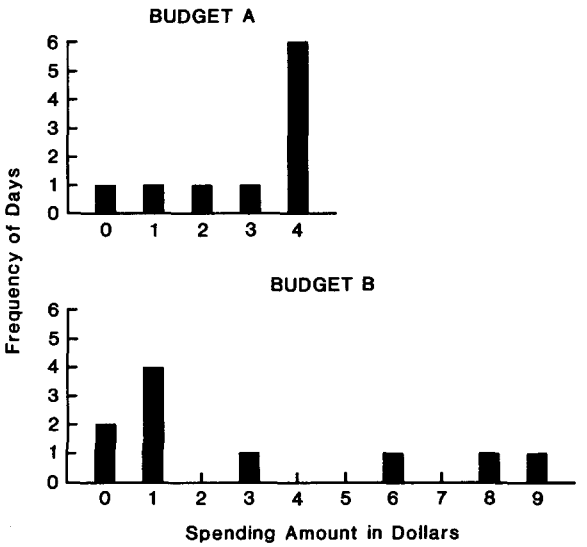

Figure 3. Hypothetical budgets (see text for explanation).

skewed Budget A, $4 is allocated for the majority of days; in the positively skewed Budget B, $1 or less is allocated for the majority of days. When choosing between the two budgets, however, one must consider that Budget B offers 3 days of spending well in excess of the amount spent on the most luxurious days in Budget A. Thus, although Budget A offers the top of its range the majority of the time, that amount seems small in comparison to the top of the range for Budget B. The problem is that in comparing the two budgets, one fails to consider each in isolation; instead, a common range may be used, which in this case extends from $0 to $9. When Budget A is considered using this extended range, all days fall below the midpoint of the range and hence seem unsatisfactory. On the other hand, Budget B offers 3 days that clearly fall above the midpoint and thus provides some chance at experiencing positive outcomes.

This budget example illustrates the importance of considering not just the overt events actually experienced but also imagined events. This notion is partially captured within range-frequency theory by the concept of the subjective range, defined by the maximum and minimum event values considered at the time of judgment. Although the subjective range is often equated with the range of experimental stimuli in psychophysical experiments, it more typically extends beyond the range of recently experienced events in social judgment experiments (as was implied by the fit of the model in the present experiment). Thus, the deterministic grip of the actual distribution of events (whether intrapersonal or social) on individual happiness may often be weak. A negatively skewed distribution can become positively skewed by extending the subjective range upward. Such a tendency could lead to depression, for the majority of experiences will then be dissatisfying. Conversely, any positively skewed distribution can become negatively skewed by extending the subjective range downward, leading to greater happiness. The potentially beneficial effects of downward extensions are consistent with recent work in the social comparison literature (e.g., Smith & Insko, 1987; Wills, 1981). In this work, downward extension results from becoming newly aware of others whose outcomes are comparatively low.

Happiness Based on Social Comparisons

A major contribution of the present study is the demonstration that the same type of range-frequency compromise that guides intrapersonal judgments of happiness also applies to judgments of happiness based on social comparisons. For socially based distributions, the implications for happiness as a function of skewness may depend on whose happiness is of concern. Although the negatively skewed distribution of outcomes creates the greatest happiness for the group, an individual at any particular outcome level will be better off in a positively skewed distribution (spanning the same range of outcomes).

However, the implications of the range-frequency model of happiness applied to social distributions depend on how one compares individuals between distributions. Figure 4 helps to clarify these implications: 11 individuals are distributed along a dimension (such as scores on a test or salaries) in either a positively or negatively skewed fashion. Range and frequency values (on a scale ranging from 0 to 100) are shown for each person, along with the judged values corresponding to an equal compromise ($w = 0.5$). The two types of arrows represent two ways of comparing individuals from the different distributions: Solid-line arrows represent comparisons of people at the same absolute value; dashed-line arrows represent comparisons of people of equal rank in the two distributions.

For the moment, let the two groups portrayed in Figure 4 represent college-bound high school juniors who have recently received their college aptitude exam scores. The range of scores for each group is the same, but the distribution of scores is negatively skewed for one group and positively skewed for the other. Assuming that the immediate group of scores is used as the context for evaluating any individual score, the average satisfaction will be higher for the group with the negatively skewed distribution ($\bar{J}_- = 56.3$ vs. $\bar{J}_+ = 43.7$); however, any given individual scoring at any particular level (except the end-scores) will have greater satisfaction in the positively skewed distribution (as denoted by the solid-line comparisons). This type of example for social comparisons, in which a person's outcome level is not expected to change with distribution, brings out the double-edged nature of value judgments entailed by range-frequency theory: What is most satisfying for the group may often work against maximizing individual happiness.

However, consider as a second example the problem of distributing salaries within a work unit of a company. Let the two groups shown in Figure 4 represent two different salary scales for the 11 employees. Once again, assume the rather restrictive assumption that the distribution of salaries within the work unit defines the context to which range-frequency principles are applied. As in the first example, it follows that group satisfaction (with salaries) is greater for the negatively skewed distribution. However, the claim that each person would be better off in the positively skewed distribution is misleading, because in assigning salaries it is expected that a person would hold the same rank in either distribution. For this type of example, comparisons of individuals of the same rank (dashed-line arrows) are most appropriate. Here, the happiness of each person in the

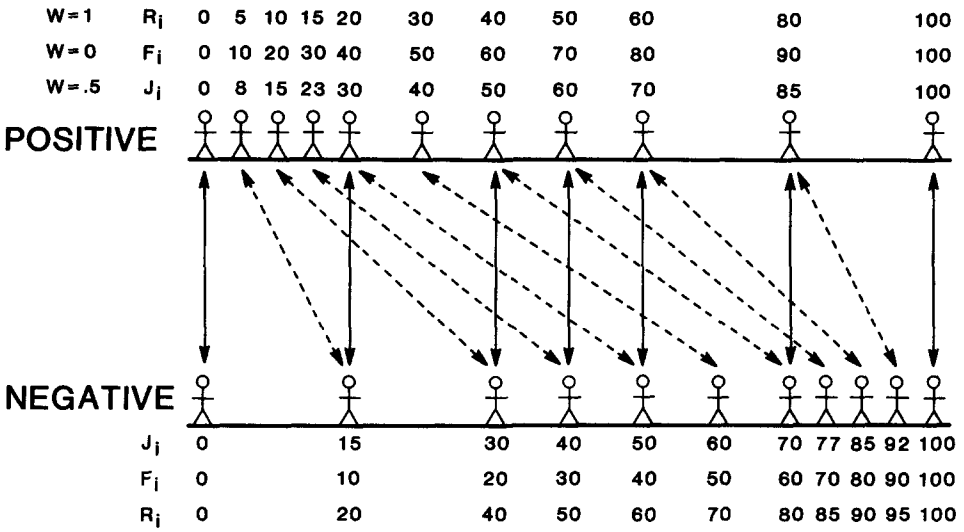

Figure 4. Range-frequency model of social comparison. (Solid-line arrows represent comparisons of people at the same absolute value, dashed-line arrows represent comparisons of people of equal rank in the two distributions. For the respective distributions, W represents the weighting of the range principle; R_i, the range value for each person; F_i, the frequency value for each person; and J_i, the judged value for each person.)

negatively skewed distribution is greater than (or equal to) the happiness of the person with the corresponding rank in the positively skewed distribution. Therefore, not only is the mean happiness greater for the negatively skewed distribution, but also each person is better off.

Although intrapersonal and social comparisons do not exhaust the possible sources of distributional standards used to make happiness judgments (Brickman & Campbell, 1971), they appear to be important sources (e.g., Campbell, Fairey, & Fehr, 1986; Levine & Green, 1984; Levine & Moreland, 1987; Michalos, 1985; Nicholls, 1984; Suls & Mullen, 1982). The present findings suggest that range-frequency principles provide a good characterization of how people use each type of information. However, what may be most crucial to the determination of overall happiness is how a person integrates both types of information. For example, a person may lag far behind in a race, ultimately finishing a distant last and yet still be happy with his or her performance because it reflects a personal best. Alternatively, a person who ranks first in a group may be unhappy with his or her performance if it represents a poor personal effort. In fact, as suggested by recent work on the functions of consensus and distinctiveness information in causal attributions (Hilton, Smith, & Alicke, 1988), it may be that intrapersonal and social comparison information will almost invariably be confounded with each other.

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