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CORRELATIONS, CAUSES AND HEURISTICS IN
SURVEYS OF LIFE SATISFACTION

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ABSTRACT. Satisfaction with life domains is more highly correlated with interpersonal than with intrapersonal comparisons (Emmons and Diener, 1985). The hypothesis of the present studies is that the high correlations reflect inferences of social comparison from global satisfaction. Paradoxically, such inferences are most likely in private domains (love life, friends), where social information is scarce and relatively unimportant as a determinant of satisfaction. Study I replicates the Emmons-Diener findings, but also finds that subjects judge recent changes more important than social standing as a determinant of life satisfaction, especially in private domains. Study II examines an order effect in judgments of satisfaction. As hypothesized the correlation between social comparison and global satisfaction is higher (in private domains only) when global satisfaction is judged first than when the order of judgment is reversed.

The main goal of the study of subjective well-being is to understand the causes of human happiness and misery. This goal has often been sought through the correlational analysis of people's evaluations of various aspects of their lives. The correlational analysis accepts the ratings of particular life domains as valid indications of satisfaction in these domains, and assumes that the overall evaluation of happiness or well-being is based on these constituent assessments. Both assumptions are called into question by an alternative approach to judgments of well-being (e.g., the "judgment model" of Schwarz and Strack, 1991), which Diener (1989) has labeled "constructionist."

The central idea of the constructionist approach is that answers to well-being surveys are not read-outs of stable internal states, but instead represent ad hoc constructions, evoked by the specific question in its particular context. Responses are understood as outcomes of a cognitive process which involves interpretation, memory search, evaluation, and editing (see also Tourangeau, 1984; Hippler *et al.*, 1987). An important implication of this view is that correlations between judgments of different variables may reflect the heuristic use of one judgment to make another, rather than a causal effect of one of the

judged variables on the other. The present report is concerned with a particular case of this ambiguity in the interpretation of correlational results.

A basic finding of well-being research is that objective circumstances and actual achievements are poor predictors of satisfaction with financial status, grades, physical condition, and other life domains (Argyle, 1987). Instead, satisfaction is mainly determined by an explicit or implicit comparison of the current state to some reference norm or standard. One tradition of research has emphasized the role of social comparisons in determining feelings of satisfaction or relative deprivation (e.g., Crosby, 1982; Festinger, 1954). Another tradition has emphasized comparisons to an adaptation level, which is mainly determined by the individual's personal history (e.g., Brickman and Campbell, 1971; Helson, 1964).

The starting point of our inquiry is a seemingly straightforward question: What is the relative importance of social comparisons and individual history in the evaluation of satisfaction with particular domains of life? Evidence on the relative importance of interpersonal and intrapersonal comparisons is scant and inconsistent. A large study of financial well-being conducted by Dutch economists (van de Stadt *et al.*, 1985) concluded that comparisons to the individual's past have substantially greater weight than comparisons to reference groups in determining satisfaction. However, a study by Emmons and Diener (1985) favors the opposite conclusion. The present note discusses the findings of the Emmons-Diener study.¹

Emmons and Diener (1985) presented 149 students with detailed questions about their satisfaction with 11 domains of their lives. The criterion variable for each domain was a satisfaction rating, worded as follows: "Please rate below how satisfied you are with each area of your life presently." The analysis focused on the prediction of this variable from other measures obtained in the same questionnaire, including self-reports of social (interpersonal) comparisons and recent change (intrapersonal comparisons).

Table I presents a subset of the data reported in Table III of the Emmons-Diener (1985) study. The salient finding is that for most domains social comparison ratings predict satisfaction much better than do ratings of recent change. The first-order correlations (not shown

TABLE I
Standardized beta weights predicting satisfaction from Emmons and Diener (1985)

Domain	Social comparison	Recent change
Friends	0.46 ^b	0.14 ^a
Love life	0.57 ^a	0.14 ^b
Grades	0.25 ^b	0.19 ^b
Housing	0.15 ^a	0.00
Physical attractiveness	0.39 ^b	0.03
Standard of living	0.27 ^b	0.06
Family	0.29 ^b	0.08
Recreation	0.34 ^b	0.12
Religion	0.25 ^b	0.06
Courses	0.07	0.24 ^b
Future career	0.31 ^b	0.18 ^b
Sum across domains	0.49 ^b	0.03

^a $p < 0.05$

^b $p < 0.01$

$N = 149$

here) support the same conclusion: over the 11 domains, the average correlation of satisfaction with a measure of social comparison was 0.64, whereas the average correlation of satisfaction with a measure of recent change was only 0.30. These results suggest that social comparisons dominate intrapersonal contrasts in determining satisfaction.

Emmons and Diener appreciated the need for caution in interpreting these correlational findings; they concluded their brief discussion of the results with the following observation: "One topic for future research is to uncover the direction of the influence between social comparison and subjective well-being. It is plausible that in some cases a feeling of well-being leads to high social comparison estimates; in other cases the influence may occur in the other direction, and frequently the influence may be bidirectional." (p. 163) As is often the case, however, this note of caution was dropped in secondary references to the study, which portray social comparison as the strongest predictor — and by implication the most important cause of satisfaction (Diener, 1984; Smith *et al.*, 1989).

Predicting and explaining global variables by their more specific constituents is intuitively appealing. In the context of well-being research,

this intuition suggests that global satisfaction with life should be explained by satisfaction with various life domains, and that satisfaction with each domain should be explained in turn by more specific measures, such as evaluations of inter- and intrapersonal comparisons. However, the constructionist perspective suggests caution. In this approach, difficult judgments are made by using the most accessible relevant information and by relying heuristically on simpler judgments or on other accessible cues such as current mood (Schwarz and Clore, 1983). Global judgments will therefore be derived from more specific constituents mainly to the extent that the latter are more accessible or easily judged. Conversely, if global satisfaction with a particular domain is more easily judged than social comparison, the global judgment could serve as a heuristic for the specific. It is plausible to assume, for example, that most people are keenly aware of their own happiness or misery in the domain of love, but relatively ignorant of the love lives of others. In the absence of more direct information about other people, one's own satisfaction can be used to guess how one compares to others. It is such social ignorance that permits many lovers to describe themselves as "the happiest person in the world".

The present account suggests the perverse hypothesis that the correlation between judgments of social comparison and of global satisfaction may be especially high in domains where people know little about others. In such cases, of course, subjective social comparison is an ad hoc construction that plays little or no part in the causation of satisfaction. These speculations were prompted by two striking results in Table I: the beta weight for social comparison is highest for love life, and notably low for grades. These results appear to contradict the everyday observation that social comparison looms larger in academic achievement than in love. Intrigued by this curious pattern, we carried out two studies to examine whether correlations accurately reflect the relative importance of interpersonal and intrapersonal comparisons in global satisfaction.

STUDY I

The first study consisted of a partial replication of the Emmons-Diener survey, with one new measure: we asked respondents to evaluate the

importance of recent changes and of social comparison in their previous ratings of satisfaction. From the set of domains studied by Emmons and Diener we selected three “public” domains in which we expected social comparison to be highly accessible (physical attractiveness, grades, and housing) and two relatively “private” domains in which information about other is likely to be more ambiguous (friends and love life). Our hypothesis was that social comparison would be considered more important in the public than in the private domains, while correlations would show the opposite pattern.

Method

Subjects. The sample consisted of 149 students (95 men, 52 women, 2 unreported) registered at U.C. Berkeley; all but a few were undergraduates with at least one previous year of college. Median age was 21. Subjects were recruited in a main artery of campus, and paid \$1.50 for completing a 10-minute survey, which also included a set of questions for use in an unrelated study.

Survey Construction. Except where indicated below, the questionnaire was patterned after the original Emmons and Diener survey for the five selected domains (friends, love life, grades, housing, and physical attractiveness).² The first portion of the survey contained satisfaction and comparison items. The satisfaction question was worded as follows: “Please rate below how satisfied you are with each area of your life presently.” The seven-point scale ranged from (1) “extremely dissatisfied” to (4) “neutral” to (7) “extremely satisfied.” The social comparison question was: “Compare yourself to the *average* college student by placing a number from the scale below next to each item. Although you may sometimes feel that you don’t really know the answer, just make your best guess. ‘Compared to the average college student, I am currently . . .’” The scale ranged from (1) “much worse off than they” to (4) “about the same” to (7) “much better off than they.” The change question was: “This semester, what changes for better or worse have you experienced in each of the areas? For each area below, indicate the changes you have recently experienced.” The scale ranged from (1) “much worse recently than before” to (4) “about the same as before” to

(7) "much better recently than before."³ We also followed Emmons and Diener in asking subjects how high their hopes and aspirations were in each area, but this item will not be discussed further.

In the next section, subjects were asked to assess the importance of interpersonal and intrapersonal comparisons in their judgments of satisfaction: "In deciding how satisfied you are with an area of your life, they may be several considerations entering into your judgment. Different kinds of comparisons, for example, may influence your reported satisfaction to various degrees. Think back to your judgments of satisfaction that you made at the beginning of this questionnaire — how important do you think each of the following comparisons was in your judgment of satisfaction?" Importance was rated on a five-point scale from (1) "completely unimportant" to (5) "very important," with no labels for intermediate points. The order of questions about the importance of interpersonal comparisons ("with other college students") and intrapersonal comparisons ("with your own past") was counter-balanced over subjects, to prevent a systematic bias.

Results and Discussion

Table II lists mean importance ratings for social comparison and for change, Pearson correlations of these variables with satisfaction and with each other, and standardized beta weights for the prediction of satisfaction. The pattern of beta weights closely replicates the results of Emmons and Diener shown in Table I: in every domain, social comparison accounts for more of the variance in satisfaction responses than does change. The finding that the beta weight for social comparison is especially high for love life is also replicated. Note that the absolute magnitudes of the beta weights are not directly comparable to those of Table I, because Emmons and Diener included several additional variables as predictors of satisfaction in their regression.

The new results of the experiment concern the importance ratings, which suggest a different story. Respondents consistently indicated that they had attached more importance to change than to social comparison in rating satisfaction. The difference was separately significant beyond the 0.01 level for every domain except physical attractiveness. The pattern also held for both sexes in separate analyses, although

TABLE II
 Mean importance ratings, standardized beta weights and correlations for five domains of satisfaction
 (G — global satisfaction; S — social comparison; C — change)

Domain	Importance		Std. β -weight		Correlation		Coefficient S-C
	S	C	S	C	S-G	C-G	
Friends	2.66	3.58	0.45	0.28	0.54	0.41	0.29
Love life	2.58	3.39	0.85	0.25	0.82	0.53	0.45
Grades	3.32	3.92	0.64	0.41	0.59	0.40	0.12
Housing	2.82	3.26	0.49	0.35	0.62	0.57	0.54
Attract	3.09	3.30	0.53	0.19	0.59	0.32	0.30

some significant gender differences were found: social comparison was more important for women than for men in determining satisfaction with grades, and recent changes were more important for women than for men in the domains of physical attractiveness and housing.

The finding that people report change to be more important than social comparison could be an artifact of social desirability: it may be embarrassing to admit that one's satisfaction with any domain of life is largely determined by envy or pride. However, the pattern of *differences* between the rated importance of interpersonal and intrapersonal comparisons for different domains is not obviously affected by social desirability. Recall that the domains selected for the study were chosen to vary in the accessibility of social comparisons: we expected accessibility of social information to be high in the public domains (grades, housing, and physical attractiveness), and low in the private domains (friends, and love life). For each subject we computed the difference between importance ratings of social comparison and of change. These differences were then averaged, separately for the public and for the private domains.

The results were consistent with predictions: the mean difference favoring change was 0.84 for the private domains (love life, friends), but only 0.42 for the public domains (grades, attractiveness, housing) ($t(145) = 4.41, p < 0.01$). The difference between private and public domains was equally large for men and for women. Thus, Study I supports the hypothesis that the correlations between ratings of global

satisfaction and of social comparison do not necessarily reflect the relative importance of these comparisons.

STUDY II

The judgment model of well-being (Schwarz and Strack, 1991) suggests that the reference norm to which people compare their state is labile (see also Kahneman and Miller, 1986). As a consequence, we should expect evaluations of satisfaction to vary with the momentary salience of different standards of comparison. For example, Strack and his colleagues (1990) found that subjects reported a higher satisfaction with their health after listening to a confederate describe how a severe medical condition reduced his enjoyment of life. Furthermore, subjects reported greater general satisfaction with their lives if the confederate was seated in plain view while they made their ratings.

Responses to survey questions can be strongly influenced by topics raised earlier in the survey (e.g., Schuman and Presser, 1981). Strack *et al.* (1988) reported a striking example. They manipulated the order of two questions in a survey of American college students: how often they go out on dates, and how happy they are with their lives. The two measures were uncorrelated when the happiness question was asked first ($r = 0.12$), but the correlation was dramatically higher ($r = 0.66$) when the happiness question immediately followed the dating question. Evidently, the salience of dating in the evaluation of overall happiness can be greatly increased by raising this topic just before the more global question. The effect is not symmetric, of course, because it is always natural for respondents to answer the dating question by consulting their memory, rather than by considering their general happiness.

The findings of Strack *et al.* (1988) suggested an additional test of the main hypothesis of this article. We proposed earlier that social comparisons in private domains of life (e.g., love or friendship) are sometimes inferred from (or anchored on) global satisfaction. This heuristic is most likely to be used, we assume, when the salience of global satisfaction is high. Salience can be enhanced, for example, by asking subjects to evaluate satisfaction just before they evaluate social comparison. Thus, we expect an order effect on the correlation between global satisfaction and social comparison, but only in private domains

where direct cues for social comparison are lacking. This analysis assumes that global satisfaction can be used to evaluate social comparison, and it also assumes that this heuristic is optional. The order effect arises because the request to make a social comparison does *not* inevitably evoke the heuristic of consulting global satisfaction.

Questions about satisfaction preceded questions about social comparison and about recent changes in the Emmons-Diener study, as they did in our Study I. This sequence is appropriate if the goal is to avoid suggesting to subjects that they use particular constituent judgments in evaluating the global questions. However, if there is a possibility that the specific judgments are affected by the global ones, or by one another, then order must be varied. We therefore conducted a survey using six different forms, representing the six possible orderings of the sections dealing with satisfaction, social comparison, and recent change. The main purpose of the experiment was to test the specific hypothesis that, in private domains, social comparisons are inferred from global satisfaction. If this dependence is asymmetric then the correlation will be higher, in these domains, when global satisfaction is rated before social comparison rather than after it. The design also permitted other possible order effects to be explored.

Method

Subjects. The sample consisted of 125 undergraduates (63 men, 60 women, 2 unreported) registered in an introductory psychology class at San Jose State University. Median age was 19. Subjects received course credit for completing a packet of questionnaires which included a well-being survey.

Survey construction. At the beginning of the questionnaire, subjects were given a preview of the items to be asked: "In the next couple of pages, we would like you to evaluate five areas of your life: your grades, your housing arrangements, your physical attractiveness, your friends, and your love life. We want to know how satisfied you are in each area, how you feel you compare with others, and what kinds of changes you have experienced recently. Your responses are completely anonymous". Following the instructions, subjects were asked to make five evaluations

(one for each domain) for each judgment type (satisfaction, social comparison, recent change). Each judgment type had instructions matching those in Study I, with minor variations of wording. Six survey forms were used, representing all possible orders of the ratings of global satisfaction, social comparison, and change.

Results and Discussion

The purpose of this study was to examine the effects of variations of order on the correlations between ratings of global satisfaction, social comparison and intrapersonal change, for each of the five life domains. We therefore computed two correlations for each pair of measures, grouping together the three forms for which the order of these measures was the same. The pairs of correlations are shown in Table III, along with a test of statistical significance for the difference between the correlations (normal test, after transformation of coefficients to Fisher's z).

Our hypothesis specifically predicted a substantial order effect for only two of the fifteen comparisons included in Table III: the correlations between global satisfaction and social comparison for the two private domains (love life and friends). In both these cases we expected the correlation to be higher when satisfaction was assessed first. The

TABLE III
Correlation of items within domains as a function of question order
(G — global satisfaction; S — social comparison; C — change)

Domain	Question order					
	S-G	G-S	C-G	G-C	S-C	C-S
Grades	0.614	0.600	0.566	0.386	0.380	0.422
Attractiveness	0.690 ^a	0.530	0.505	0.577	0.608	0.436
Housing	0.755 ^a	0.580	0.575	0.664	0.671	0.538
Friends	0.408 ^b	0.760	0.538	0.473	0.576	0.509
Love life	0.555 ^b	0.868	0.620	0.623	0.440 ^a	0.669
N	62	59	60	61	62	63

^a $0.05 < p < 0.10$

^b $p < 0.01$

results are striking: the two correlations for which a difference was predicted are the only ones for which the difference is significant ($p < 0.01$). These results confirm the idea that global satisfaction provides an optional (not obligatory) heuristic for social comparisons.

Three other differences in Table I approach significance ($0.05 < p < 0.10$). For love life (but not for friendships) there is an indication of an order effect on the correlation between change and social comparison; the direction of the asymmetry suggests that change may also be used as a heuristic to evaluate social standing. For two of the three public domains, the correlation between social comparison and satisfaction is higher when social comparison is queried first than when it is queried second. Applying the argument that we have borrowed from Strack *et al.* (1988), this result suggests that social comparison is an optional determinant of global satisfaction in public domains, and that its weight is increased by a favorable ordering of questions.

The study of order effects provides a useful diagnostic tool for the analysis of relations between judgments of different variables. By this diagnostic, reliance on global satisfaction has been identified as an optional heuristic for the judgment of social comparison in private domains, and social comparison may be an optional heuristic for judgments of global satisfaction in some public domains. One salient exception is the domain of grades, where the social comparison may be so natural that it is an obligatory heuristic. The evaluation of recent changes in life domains shows no order effects, implying that these assessments are probably made without specifically consulting either global satisfaction or social comparison.

GENERAL DISCUSSION

The results of both studies illustrate the power of a judgmental analysis of measures of well-being, as well as the pitfalls of drawing causal inferences from correlations between these measures. In Study I we found that the subjective importance that respondents assign to social comparison is relatively low in private life domains, whereas the correlation between social comparison and global satisfaction in these domains is notably high. Global satisfaction was assessed before social comparison in Study I. Study II showed that reversing the order of the

questions significantly reduces the correlation between these ratings, presumably by curtailing the use of global satisfaction as a heuristic for judging social comparison. The results are embarrassing for any view that treats the rating of well-being as a read-out from a well-defined subjective dimension onto a response scale. The alternative view is that assessing one's well-being is a complex task, which subjects solve in part by opportunistic reliance on cues provided by the question itself, by earlier questions in the survey, and by the circumstances of the moment (Schwarz and Strack, 1991).

The question of what are the "determinants" of happiness or of any particular aspect of well-being does not become meaningless in the context of a judgmental analysis. The substantive conclusion of our judgmental analysis is that Emmons and Diener probably overestimated the importance of social comparison in determining satisfaction in private domains, not that the question they posed was pointless. Like physical or mental health, intelligence, beauty, and good character, happiness is a complex multidimensional object of judgment. Thus, the individual's present state and past history, and the relation of these with the circumstances of relevant others are all potential determinants of satisfaction with life domains. Furthermore, the very meaning of "happiness" to a subject can change depending on the circumstances of the moment. The causal analysis of labile, error-prone and interdependent judgments presents a difficult problem of how to disentangle the factors that affect the object of judgment from the factors that affect the judgment itself. We do not believe that these difficulties make the enterprise of analyzing well-being impossible. However, it now appears that the conceptual basis for this analysis should be broadened to include relevant findings of cognitive psychology, and that the standard correlational techniques of the field should in some cases be supplemented by an experimental approach.

NOTES

* University of California at Berkeley. The first study is based on an honors thesis submitted by Craig Fox to the Department of Psychology at the University of California. The research was partly supported by a grant from the Sloan Foundation and by the Air Force Office of Scientific Research under grant number AFOSR 88-8206 to Daniel Kahneman. We thank Amy Hayes for her assistance in data collection.

¹ Some of the comments that follow raise questions about the method used by Emmons and Diener. It is fair to relate that, before learning of their work, we planned a study using precisely the method that we now question. We were drawn to a critical scrutiny by the surprising results that this common method yielded in their research.

² We are grateful to E. Diener and R. A. Emmons for providing us a copy of their survey instrument.

³ The last two words were added to the question used by Emmons and Diener, to eliminate a possible ambiguity.

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