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Changes in Attractiveness of Elected, Rejected, and Precluded Alternatives: A Comparison of Happy and Unhappy Individuals

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In 3 studies the authors compared the responses of self-rated happy and unhappy students in situations involving choice. In Study 1, high school seniors evaluated colleges after applying for admission and then later after making their selections. Happy students tended to be more satisfied than unhappy ones with the colleges they ultimately chose and those they ultimately rejected, and they more sharply devalued the colleges that rejected them. Studies 2 and 3 dealt with postdecisional consequences of less consequential decisions about fancy desserts. In Study 2, unhappy participants sharply derogated the desserts they rejected or were denied, relative to those selected by or for them, whereas happy participants showed no such derogation. These group differences, moreover, proved to be largely independent of self-esteem and optimism. The design of Study 3 helped explicate underlying mechanisms by inducing both groups to distract themselves or to self-reflect. Doing so eliminated all group differences. Implications of the results for the link between cognitive processes and hedonic consequences are discussed.

The pursuit of happiness has long been an American obsession. Claimed as a right in the Declaration of Independence, it remains a popular topic for philosophers, sociologists, political scientists, and an ever-increasing number of self-help gurus willing to share their recipes for success. Indeed, Myers and Diener (1995) reported that close to 8,000 studies on happiness and subjective well-being were published during the 1980s alone, and Freedman (1978) noted that the majority of respondents thought about happiness at least once every day. Moreover, despite continuing controversy about the magnitude and conceptual status of global personality traits in general (i.e., Mischel, 1968, 1984; see also Bem & Allen, 1974; Epstein, 1979; Kenrick & Funder, 1988; Ross & Nisbett, 1991), everyone can identify people who seem consistently happier than their peers or than the objective circumstances of their lives would dictate—individuals who truly seem able to "see the world through rose-colored glasses" and to "turn lemons into lemonade." Similarly, most individuals know people who, even in the absence of adversity, seem chronically dysphoric and inclined to accentuate the negative.

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Beyond such anecdotal evidence, almost a century of research supports the impression that—at least within the limits of threat and privation experienced by most members of society—subjective factors rather than objective ones account for most nontransitory differences in personal happiness (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). Thus, although there is evidence for a positive correlation between wealth and happiness both in cross-national comparisons and in comparisons of different income groups within American society (e.g., Diener, Diener, & Diener, 1995; Diener, Sandvik, Seidlitz, & Diener, 1993; Inglehart, 1990), it is the relative weakness of such correlations that is most notable. Indeed, one study (Diener, Horowitz, & Emmons, 1985) revealed that Americans earning more than $10 million annually reported levels of personal happiness only trivially greater than their less affluent peers. Brickman, Coates, and Janoff-Bulman (1978) offered even more dramatic testimony that neither good fortune (e.g., winning half a million dollars in a lottery) nor bad (e.g., becoming quadriplegic in an accident) produces large and enduring differences in self-rated happiness.

Such anecdotal and empirical evidence naturally shifts our attention to the way happy and unhappy individuals subjectively experience, interpret, evaluate, and remember events that touch their lives. Prior studies, for example, reveal that happy people think more positively about both themselves (Campbell, 1981) and others (Matlin & Gawron, 1979), feel more personal control (Larson, 1989), react more positively and intensely to positive life events, and show less prolonged dysphoria in response to negative ones (Lyubomirsky, 1994; Lyubomirsky & Tucker, 1998; Seidlitz & Diener, 1993) than do unhappy people.

The present research extends this general line of investigation into a domain familiar to social psychologists, that is, the consequences of exercising choice and/or having one's options restricted by others. Before describing our research design and rationale in detail, however, we introduce a different and broader context for our enterprise. That context involves the varied and seemingly

conflicting hedonic consequences of the many cognitive processes and biases that psychologists in various subdisciplines have been exploring over the last 2 decades.

Cognitive Processes and Hedonic Consequences

In the immediate aftermath of psychology's cognitive revolution, social psychologists began to pay close attention to the inferential tools and biases that govern human judgment and decision making (see Dawes, 1988; Fiske & Taylor, 1984; Kahneman, Slovic, & Tversky, 1982; Miller & Ross, 1975; Nisbett & Ross, 1980; Ross, 1977). Increasingly, however, focus has shifted to more affective concerns, that is, the consequences of the various biases and processes for self-esteem management and subjective well-being (see Kunda, 1990; Taylor, 1983; Taylor & Brown, 1988). A major emphasis in such work has been on self-esteem enhancement (see reviews by Greenwald, 1980; Taylor & Armor, 1996; Taylor & Brown, 1988) and positive assessment of self relative to others. Researchers have found, for instance, that the majority of workers rate their job performance as above average (Heady & Wearing, 1987) and that the majority of motorists—even those who have been involved in accidents—rate their driving as safer than average (Svenson, 1981). Moreover, college students believe themselves more likely than their peers to find a good job, own a home, avoid falling victim to crime, and be spared other hardships such as giving birth to a disabled child (Weinstein, 1980). To be sure, not all assessment domains show self-enhancement biases, but when they so often do, one would expect their hedonic consequences to be positive for the individual.

When we turn our attention from self-assessment to other long-studied processes and biases, however, we find a less consistent and less positive story. Consider, for example, the familiar "hedonic treadmill" (described by Brickman & Campbell, 1971), whereby people become ever more satiated and less satisfied by a given type or level of positive experience, so that ever more difficult-to-obtain sources of pleasure are required to achieve and maintain a given level of hedonic satisfaction. Alternatively, consider social comparison theory, which, at least in its initial formulation (Festinger, 1954) postulates a unidimensional drive upward. Surely, selecting targets more intelligent (Wheeler et al., 1965), higher paid (Crosby, 1976), and sharper looking (Morse & Gergen, 1970) than oneself exacts some hedonic costs. However, as Taylor and her colleagues observe, comparison with actual or imaginable others can have positive consequences for people facing illness or adversity. Downward comparisons can make such people feel relatively well off and upward comparisons can motivate and inspire rather than depress (Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990; Taylor, 1983; Taylor & Lobel, 1989; Wills, 1981).

Other well-studied cognitive processes and biases seem to offer similarly mixed or uncertain hedonic consequences. In particular, processes or biases in memory that dispose individuals to recall especially happy or unhappy events in the past—for example, a blissful or disastrous vacation, an incomparably fine or dreadful meal, or an especially idyllic or destructive relationship—can make one either happier or sadder depending on whether one treats them as part of his or her fortunate or unfortunate endowment or as a heartening or distressing basis for contrast (see Strack, Schwartz, & Gschneidinger, 1985; Tversky & Griffin, 1991).

The Present Research

This brief review of hedonic consequences, coupled with our earlier discussion of individual differences in hedonic functioning, prompts the hypothesis that happy and unhappy people differ in the particular cognitive and motivational strategies they use and in the particular biases they show. More specifically, we expect them to differ in a manner consistent with and supportive of their differing states or temperaments. Our review also serves to introduce the domain explored in the present research, that is, postdecisional biases in the evaluation of chosen versus nonchosen and/or offered versus withheld alternatives. Two familiar theories are relevant in this regard: dissonance theory (Festinger, 1957; see also Aronson, 1969; Brehm & Cohen, 1962) and reactance theory (Brehm & Brehm, 1981; Wicklund, 1974). Each theory addresses the hedonic and motivational consequences of choices—choices made by individuals themselves and choices made by others that provide or withhold desirable opportunities (see also Bell, 1982; Kahneman & Tversky, 1979; Loomes & Sugden, 1982; Ross & Stillinger, 1991).

Although there is no formal incompatibility between the two theories, their spirit and the mechanisms they postulate generally seem to offer different and opposing hedonic consequences. Thus, when a person concludes that the grapes he or she cannot reach will probably be sour anyway, or when someone decides that the unique features of a new appliance were even more useful than previously thought, or when a student cannot imagine how he or she ever even considered Yale rather than Stanford, those people are responding in a manner that would gladden the heart of the dissonance theorist. When people complain that the grass is greener on the other side of the fence, wonder whether it is really worth joining any club that would admit folks like them, or pine for the girlfriends or boyfriends who dumped them before they could do the dumping, they are responding in a manner thoroughly explicable to the reactance theorist. The research reported in this article was not designed to explicate, much less resolve, any apparent tension between dissonance theory and reactance theory. Rather, in light of the theoretically postulated mechanisms that might lead people to increase, decrease, or maintain their current level of happiness as a consequence of the decisions they make and the decisions made about them, we sought to explore the possibility that happy and unhappy participants may show different evaluative responses in the aftermath of such decision making.

A reasonable working hypothesis, of course, is that happy individuals will evaluate options and outcomes in a way that better maintains and promotes their overall happiness and satisfaction than will unhappy individuals. Pilot research from our laboratory, in which assessments of hedonically relevant life events were examined, offers illustrative support for this hypothesis. Although happy and unhappy respondents reported experiencing similar types of life events, follow-up ratings a few weeks later indicated that happy respondents showed more rapid declines in negative affect and were more likely to see humor or didactic value in misfortune than were unhappy respondents. Furthermore, happy students were relatively more likely to resolve ambiguity about such events in a favorable and adaptive fashion (Lyubomirsky & Tucker, 1998). However, other studies and anecdotal experience caution us against making overly simplistic predictions about the coping strategies of happy folks; sometimes happy people seem

markedly less preoccupied with hedonic management concerns than do their unhappy peers. Consider, for example, a recent set of studies, which demonstrated that happy participants generally were less influenced by the relative performance of a supposed peer (Lyubomirsky & Ross, 1997) or a competing "team" (Lyubomirsky & Tucker, 1999) than were unhappy participants. Interestingly, happy students gave weight to relevant social comparison information only when it served to soften the implications of a poor evaluation, not when it threatened to undermine the value of a positive one.

The studies reported in this article further examine happy and unhappy individuals' responses to hedonically relevant outcomes and events. In Study 1 we explored the affective aftermath of a decision-making process with clear and significant hedonic stakes, that is, the sequence of events in which high school seniors first investigate and apply to colleges, then learn where they have been accepted or rejected, and ultimately make their own final choice from the available alternatives. In Study 2 we examined options and outcomes that have seemingly modest and debatable hedonic stakes, that is, the selection of a fancy dessert. Once again, the possibility explored in both studies was that happy participants will respond to the various options presented, precluded, or selected in a manner that better enhances positive feelings and self-evaluations than will unhappy participants—for example, by reducing feelings of dissonance and avoiding reactance, regret, or threat to self-esteem. In Study 3 we further examined a possible mechanism behind the hypothesized differences between the two groups, namely, unhappy individuals' relative propensity to reflect and ruminate about themselves, their choices, and their outcomes. More specifically, we sought to reduce or even eliminate group differences by inducing both groups either to distract themselves or to engage in self-directed thinking.

Study 1

Studies investigating postdecisional responses typically present participants with decision alternatives that carry relatively modest hedonic stakes, such as various electrical appliances (e.g., Brehm, 1956), art posters (e.g., Wilson et al., 1993), or hair styles (e.g., Festinger & Walster, 1964). (For exceptions, see Lawler, Kuleck, Rhode, & Sorensen, 1975; Walster, 1964.) Furthermore, the restriction of alternatives is typically justified through explanations (e.g., shortness of supply) that pose little threat to recipients' self-identity or sense of self-worth. Suppose, however, that the relevant restriction of opportunities threatened important long-term consequences and in some cases resulted not from chance or one's own choice but from an explicit assessment of one's worthiness. To what extent, and in what fashion, might chronically happy and unhappy individuals differ in the aftermath of such hedonically consequential decisions? In accordance with our conceptual analysis, we hypothesized that happy individuals would show a greater increase in liking for alternatives they chose relative to those they rejected than would unhappy individuals, and happy individuals would show a steeper devaluation of alternatives denied to them by others on the basis of their assessed worthiness.

To address these questions, in Study 1 we focused on the responses of high school seniors engaged in the drama of college selection. The application process, the receipt of acceptance and rejection letters, and the ultimate choice of which college to attend is a serious matter for students. The potential for professional training, emotional and intellectual growth, and formation of lifelong social networks (to say nothing of the costs and debts incurred) makes the college decision an undeniably important one for all concerned. Indeed, the threat to self-esteem of being accepted or rejected and the hedonic consequences of choosing wisely or foolishly are familiar enough to most readers of this article. In Study 1 we examined changes in high school seniors' evaluations of the colleges that had rejected their application for admission and of the single college that each student had ultimately elected to attend, two outcomes with obvious hedonic implications. We also examined changes in the students' evaluations of colleges that offered them admission but that they turned down, outcomes with more ambiguous hedonic stakes.

Method

Overview

In the context of a purported study of life decisions, self-rated happy and unhappy high school seniors twice evaluated all of the colleges to which they had applied, once shortly after submitting their college applications and then again after receiving acceptance and rejection notices and deciding which college to attend. On both occasions, the participants used 100-point scales to rate the colleges on their overall desirability, academic quality, quality of social life, affordability, and attractiveness of location. The relevant self-ratings of happiness were completed during the first session, and ratings of current mood were completed during both sessions.

Participants

Thirty-six high school seniors (23 women and 13 men) from a small, private college preparatory school in Washington, DC, participated in this study. Students were classified on the basis of their responses to the four-item Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) administered during the study's first session. Each item was answered on a 7-point scale. The first item asked them to characterize themselves using absolute ratings (1 = *a very unhappy person,* 7 = *a very happy person*). The second item asked them to characterize themselves relative to their peers (1 = *much less happy,* 7 = *much more happy*). The third and fourth items, respectively, characterized happy people ("Some people are generally very happy; they enjoy life regardless of what is going on, getting the most out of everything") and unhappy people ("Some people are generally not very happy; although they are not depressed, they never seem as happy as they might be"), and each asked participants to rate the extent to which the relevant characterization described them (1 = *not at all,* 7 = *a great deal*). Responses to the four items were combined and averaged to provide a composite scale score, ranging from 1.0 to 7.0 (Cronbach's $\alpha = 0.81$).[1] Of the 36 students whose ratings were combined and averaged to provide the relevant composite scores, those 18 students with combined scores above the median of 5.5 were classified as happy

[1] This simple composite measure of self-rated happiness has demonstrated high internal consistency (αs from .79 to .94), a unitary structure, and stability over time and across 14 different samples. To assess the scale's validity and reliability, we collected data in Russia from students

(M = 6.11, SD = 0.78), and the remaining 18 students were classified as unhappy (M = 4.15, SD = 1.19).[2,3]

Procedure and Materials

Students participated in two group-administered questionnaire sessions, which were approximately 3 months apart; each lasted about 30 min. In both of these sessions, they were told that the questionnaire dealt with the evaluation process involved in life decisions—in particular, their own current decision of which college to attend. In both sessions, they were given oral and written instructions to clarify the content and intent of the questionnaire.

During Session 1, which took place shortly after all of the students had sent in their college applications but before they had received any acceptance or rejection notices, they were first asked to list all of the colleges to which they were applying and to rate the overall desirability of each college (i.e., "how much you think you would like it") using a 100-point scale (1 = *like least; worst possible college I could imagine,* 50 = *average,* 100 = *like most; best possible college I could imagine*). Participants were next asked to rank the five colleges they had rated most desirable and then to rate each in terms of how satisfactory they found it on four specific criteria—that is, academic quality, quality of social life, affordability, and attractiveness of the college's location—using 7-point scales (1 = *not at all satisfactory,* 7 = *completely satisfactory*). Participants also were asked to rate the importance of each of these four criteria in determining their college choice (1 = *not at all important,* 7 = *extremely important*) and to list and rate the importance of any other criteria they deemed relevant to their decision.[4] Participants were also asked to rank their five most desirable colleges in terms of the likelihood of their personally being offered admission. In the second part of the questionnaire, participants completed the SHS (Lyubomirsky & Lepper, 1999). Participants also rated how sad, joyful, depressed, and happy they were currently feeling using 9-point Likert scales; the four scores were subsequently combined to provide a single measure of positive mood (α = .84).

Session 2 took place approximately 3 months later, after the students had received all of their college acceptances and rejections and had made their final decisions about which college to attend. At this session, following a brief introduction the participants completed the questionnaire that would allow us to determine changes in their ratings of the relevant schools. First, participants once again were asked to list all of the colleges to which they had applied and then to rate the overall desirability, academic quality, quality of social life, affordability, and attractiveness of location for each college, as well as the importance of each of the last four criteria. Participants then were asked to indicate each college's decision regarding their application (i.e., early admission, regular admission, rejection, or waiting list) and to write down the name of the particular college they had chosen to attend. Finally, participants were asked to complete the same four measures of mood they had completed during the first questionnaire session (α = .80).

Results

Data analyses focused on changes of ratings for three categories of colleges: (a) the single college that each student ultimately decided to attend (i.e., *chosen colleges*); (b) the colleges that had rejected the student's application (i.e., *rejecting colleges*); and (c) the colleges that had accepted the student but that the student had elected not to attend (i.e., *nonchosen colleges*).

Preliminary Analyses

Preliminary analyses revealed no main effects or interactions involving the sex of the participant; accordingly, subsequent analyses and the presentation of results collapse across this variable. On average, students applied to five colleges (M = 5.08, SD = 2.27), were admitted to three to four (M = 3.44, SD = 1.65), and were rejected by one (M = 1.00, SD = 1.17). Happy and unhappy students did not differ significantly in these statistics. Preliminary analyses further revealed no differences in the quality of the colleges (as rated by Gourman, 1989) to which happy versus unhappy participants applied, the colleges to which they were admitted, or the colleges they ultimately chose to attend. This finding is interesting in its own right, but its main importance for our purposes is that it eliminated any need to correct for any

and community adults and in the United States from students on two college campuses and one high school campus, from community adults in two California cities, and from retired adults (N = 2,732). Examination of construct validity revealed that the measure correlates highly with other happiness measures and moderately with theoretically and empirically related constructs. These correlations, however, do not exceed .70, suggesting that the happiness composite is not equivalent to these measures. For example, correlations range from .53 to .58 with Rosenberg's (1965) Self-Esteem Scale and from .47 to .60 with Scheier and Carver's (1985) Life Orientation Test. (Further consideration of the relationship between happiness and other related constructs will be postponed until the General Discussion.) Evidence of discriminant validity is further reflected in very low correlations with theoretically unrelated constructs, including academic ability and stressful life events. Additionally, the new measure has shown self–peer correlations comparable to those reported for other well-being instruments (cf. Diener, 1994). Finally, the first item on the scale, which arguably is the most face valid, as well as lacking in appraisal-related content, shows almost identical correlations as the composite across measures, time periods, and informants. For more detailed information on the new happiness measure, see Lyubomirsky and Lepper (1999).

[2] Given the absolute values of these means, one could argue that the unhappy group might better be labeled *not happy* or even *average.* We were guided, however, by research showing that on measures of current or long-term affective state and, indeed, on most measures of well-being, life satisfaction, or self-esteem, people tend to show overall means that are on the high or above-average end of the scale (Bradburn, 1969; Campbell, Converse, & Rogers, 1976; Rosenberg, 1965; Watson, Clark, & Tellegen, 1988). Accordingly, the self-ratings of our current unhappy participants, which were just slightly below the midpoint of 4.0 on the relevant scale, meant that they were unhappy relative not only to our self-labeled happy participants but also to their peers in the population as a whole.

[3] It should be noted that the examination of data only from participants who scored in the upper or lower quartiles on both happiness measures produced patterns of means that were virtually identical to the ones obtained using our less stringent criteria.

[4] Judgments of affordability and attractiveness of location, as well as importance ratings, are not discussed further in this report. We merely note here that our subsequent analyses showed no significant changes or group differences for any of these measures, and that neither affordability nor location attractiveness was rated as important a criterion as the two factors that are featured in our discussion of results, that is, academic quality and social life. Furthermore, we discovered in postexperimental interviews that the seemingly important affordability question was a source of confusion for our participants, in part because the relevant questionnaire item did not distinguish between affordability in general and affordability given the particular student's resources and/or the colleges' offer of aid, and in part because several students were unsure whether a *high* rating connoted high affordability or high cost.

such differences in subsequent comparisons of happy versus unhappy participants' assessments. Finally, our analyses suggested that our two groups did not significantly differ in their initial (i.e., predecisional) ratings of the overall desirability of the colleges to which they applied, nor did they differ in their more specific ratings of the colleges' academic quality, social life, affordability, or attractiveness of location.

Changes in Evaluations

Our main concern involves changes in the students' assessments of colleges in the three relevant categories: chosen, rejecting, and nonchosen colleges. The analysis of change creates some interpretive problems because of possible regression effects and other related artifacts (not the least of which was the possibility that changes in students' evaluations occurring prior to their own decision about which college to attend would presumably influence their actual college choices). These problems do not prevent us from appropriately comparing changes in assessments shown by happy and unhappy participants in the study, but they do require the exercise of some caution in characterizing apparent increases or apparent decreases in ratings.

Chosen colleges. Students' postdecision assessments revealed that they generally gave more positive overall ratings to the colleges that they had chosen to attend than they had given the same colleges earlier, before the colleges' acceptance notices had been sent out and before the students in turn had made their selections ($D = +5.60$ on the relevant 100-point scale, $SD = 11.10$), $t(34) = 2.44$, $p < .02$. However, our primary concern lies with differences in the nature and magnitude of postdecisional rating changes shown by happy versus unhappy participants (see Figure 1). A repeated measures analysis of variance (ANOVA), with group (happy vs. unhappy) as the independent variable and time (initial vs. final) as the repeated measure revealed a significant

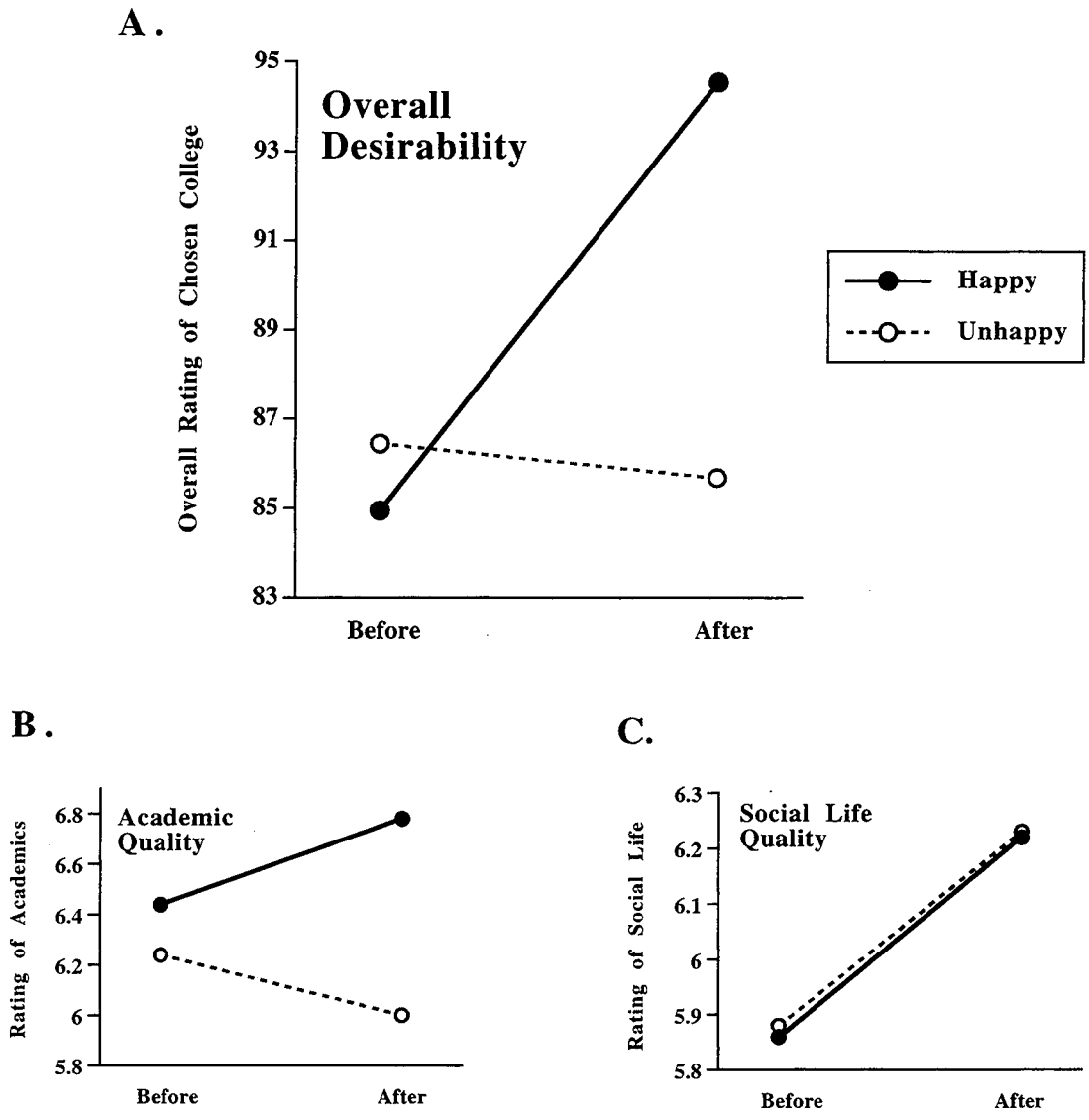

Figure 1. Changes in ratings of overall desirability (A), quality of academics (B), and quality of social life (C) of chosen colleges (Study 1).

Group × Time interaction, $F(1, 33) = 9.57$, $p < .004$. When we examined the relevant means, we found that in the case of happy participants, the increase in ratings for selected colleges was relatively large and consistent ($D = +9.61$, $SD = 8.35$), $t(17) = 4.89$, $p < .0001$. By contrast, unhappy participants showed no change in ratings (but actually a nonsignificant decrease; $D = -0.76$, $SD = 11.35$), $t(17) = 0.28$, *ns* (see Figure 1A).

Examination of separate ratings for academic quality and social life revealed the locus of this effect. We found the same Group × Time interaction with respect to the key measure assessing academic quality, $F(1, 33) = 9.57$, $p < .004$, such that happy students showed a modest but significant increase in their ratings ($D = +0.33$ on a 7-point scale, $SD = 0.59$), $t(18) = 2.38$, $p < .03$, whereas unhappy students showed no significant change ($D = -0.24$, $SD = 0.90$), $t(17) = 1.07$, *ns* (see Figure 1B). The relevant interaction, however, was insignificant for the assessment of the quality of social life, $F(1, 33) < 1$. Both happy and unhappy participants showed similar increases in ratings on this criterion ($D = +0.36$, $SD = 0.76$, and $D = +0.35$, $SD = 1.11$, respectively; see Figure 1C).

Rejecting colleges. Overall, students showed a tendency to downgrade the colleges that had not offered them admission. This was true for overall ratings of the college ($D = -11.46$, $SD = 26.65$) and to a lesser degree also for more specific ratings of academic quality ($D = -0.20$, $SD = 0.68$) and quality of social life ($D = -0.49$, $SD = 1.17$). Once again, however, direct comparisons of changes in the evaluations of happy and unhappy students revealed some marked between-group differences. A repeated measures ANOVA indicated a marginally significant Group × Time interaction for global assessments, $F(1, 18) = 4.32$, $p < .06$, and a significant interaction for assessments of the quality of social life, $F(1, 15) = 5.29$, $p < .04$, although, interestingly, virtually no interaction effect for the measure assessing academic quality, $F < 2$.[5] That is, as shown in the three panels of Figure 2, happy participants significantly devalued the colleges that had rejected them, both in their overall assessments ($D = -24.09$, $SD = 17.18$), $t(9) = 4.06$, $p < .004$, and in their assessments of social life ($D = -1.04$, $SD = 0.93$), $t(9) = 3.36$, $p < .01$, but not in their assessments of academics ($D = -0.31$, $SD = 0.75$), $t(9) = 1.26$, *ns*. Unhappy participants, by contrast, showed no tendency to devalue the colleges that had rejected them, either in their global ratings ($D = -1.12$, $SD = 28.89$), $t(10) = 0.13$, *ns*, or in their more specific ratings of the quality of social life ($D = +0.13$, $SD = 1.16$), $t(7) = 0.31$, *ns*, and academic quality ($D = -0.09$, $SD = 0.64$), $t(8) = 0.44$, *ns*.

An analysis focusing on students' evaluations of the overall desirability of their first choices—the colleges whose acceptance or rejection presumably involves the greatest stakes—is particularly revealing. A significant Group × Time × Admission Status of first-choice college (accepted versus rejected) interaction effect, $F(1, 29) = 4.30$, $p < .05$, revealed the following pattern. Happy students tended, in their global assessments, to enhance somewhat their liking for their first-choice college if it admitted them ($D = +4.60$, $SD = 7.21$) but to derogate their first-choice college if it rejected them ($D = -10.25$, $SD = 12.56$). Unhappy students, by contrast, showed no such dissonance-reducing tendency. In fact, they tended to derogate first-choice colleges that admitted them ($D = -7.42$, $SD = 12.98$) even more than they derogated first-choice colleges that rejected them ($D = -3.67$, $SD = 10.26$).

Nonchosen colleges. Students in general tended to show lowered ratings for the colleges they decided not to attend. Moreover, as reflected in a nonsignificant Group × Time interaction, happy and unhappy participants showed similarly marked tendencies to downgrade the overall desirability of their nonchosen colleges. That is, the relevant rating decreases were significant for both happy participants ($D = -8.49$, $SD = 9.29$), $t(16) = 3.66$, $p < .003$, and unhappy ones ($D = -12.10$, $SD = 18.42$), $t(13) = 2.37$, $p < .04$ (see Figure 3A).

Examination of the more specific assessment measures, however, did reveal some suggestive differences between the two groups. The bottom panels of Figure 3 display a marginal Group × Time interaction effect both for assessments of academic quality, $F(1, 28) = 3.73$, $p < .07$, and for assessments of the quality of social life, $F(1, 28) = 3.99$, $p < .06$. That is, whereas unhappy students showed significant decreases in their evaluations of both academic quality ($D = -0.47$, $SD = 0.70$), $t(14) = 2.53$, $p < .03$, and the quality of social life ($D = -0.92$, $SD = 1.14$), $t(14) = 3.01$, $p < .01$, for their nonchosen colleges, happy students showed no significant changes in their ratings of either academics ($D = +0.09$, $SD = 0.86$) or social life ($D = -0.23$, $SD = 0.71$).

Mood Ratings

Mood ratings at Session 1, when colleges had initially been evaluated, suggested that happy students felt themselves to be in a more positive mood ($M = 6.91$, $SD = 1.21$) than had unhappy students ($M = 4.43$, $SD = 1.64$), $t(29) = 5.03$, $p < .0001$. This difference in immediate mood seems to have decreased after college decisions had been made. Although happy students still reported a somewhat more positive mood ($M = 6.31$, $SD = 1.52$) than did unhappy students ($M = 5.63$, $SD = 1.58$), the relevant difference in means no longer reached significance, $t(33) = 1.32$, *ns*. To test whether transient mood rather than longer term happiness had moderated the between-group differences presented above, we conducted all the relevant ANOVAs again, this time with participants' mood scores at Session 1 and those at Session 2 used separately as covariates. Each of these analyses, however, yielded results that were virtually identical to those that had been obtained without using mood as a covariate. That is, all significant effects reported remained significant, and all nonsignificant effects remained nonsignificant.

Discussion

Our two straightforward predictions about group differences were confirmed. Happy participants, as predicted, showed a greater tendency than did unhappy participants to increase their liking for the particular college they chose to attend. Furthermore, as predicted, happy participants were relatively more inclined than unhappy ones to devalue the colleges that had rejected them. Both

[5] The disparities in degrees of freedom in these analyses reflect missing data for some participants who lacked a set of rejecting colleges or, in further analyses, those who lacked a set of nonchosen colleges. That virtually the same pattern of results emerged with the reduced sample size further increases our confidence in the significance of our findings, as well as challenges the possibility that this set of participants may have critically differed from the rest.

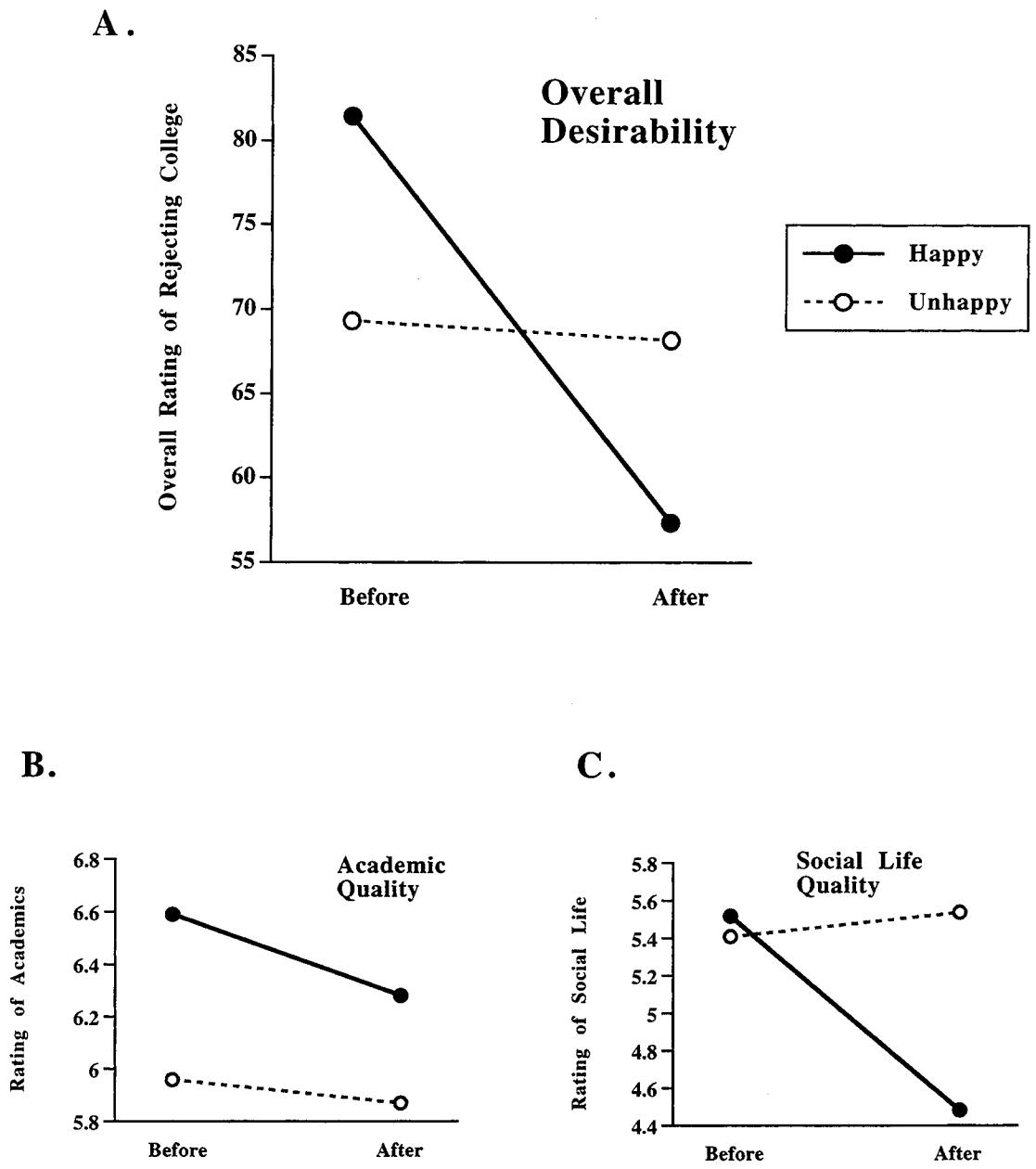

Figure 2. Changes in ratings of overall desirability (A), quality of academics (B), and quality of social life (C) of rejecting colleges (Study 1).

of these group differences were especially pronounced in the case of colleges that had been the students' original first choice.

Evaluations regarding nonchosen colleges were more equivocal with respect to our conceptual analyses and original hypotheses. Happy students proved somewhat less inclined than unhappy ones to devalue the colleges that they rejected. However, it is not clear that derogation of rejected academic alternatives best serves long-term hedonic goals. Doing so may serve to reduce postdecisional dissonance, but it does little to enhance self-esteem, and it is the happy students rather than the unhappy ones who are left with the conviction that the world is full of attractive options. Indeed, unhappy students seem to have been prone to the Marxist analysis (Groucho, not Karl) that any colleges that accepted them can't be that good, whereas happy students seemed to feel that the colleges accepting them had shown good taste, and that they, in turn, had merely selected the best alternative from an attractive set of options.

It is interesting to note at this point that although happy students downgraded the colleges that rejected them in terms of overall desirability and desirability of social life, they showed no tendency to downgrade their academic quality. Such rejection seemingly attested to the rejecting college's academic standards, and, in fact, the more stellar a student assessed it to be, the less its rejection suggested inadequacy on the part of the rejected student. Instead,

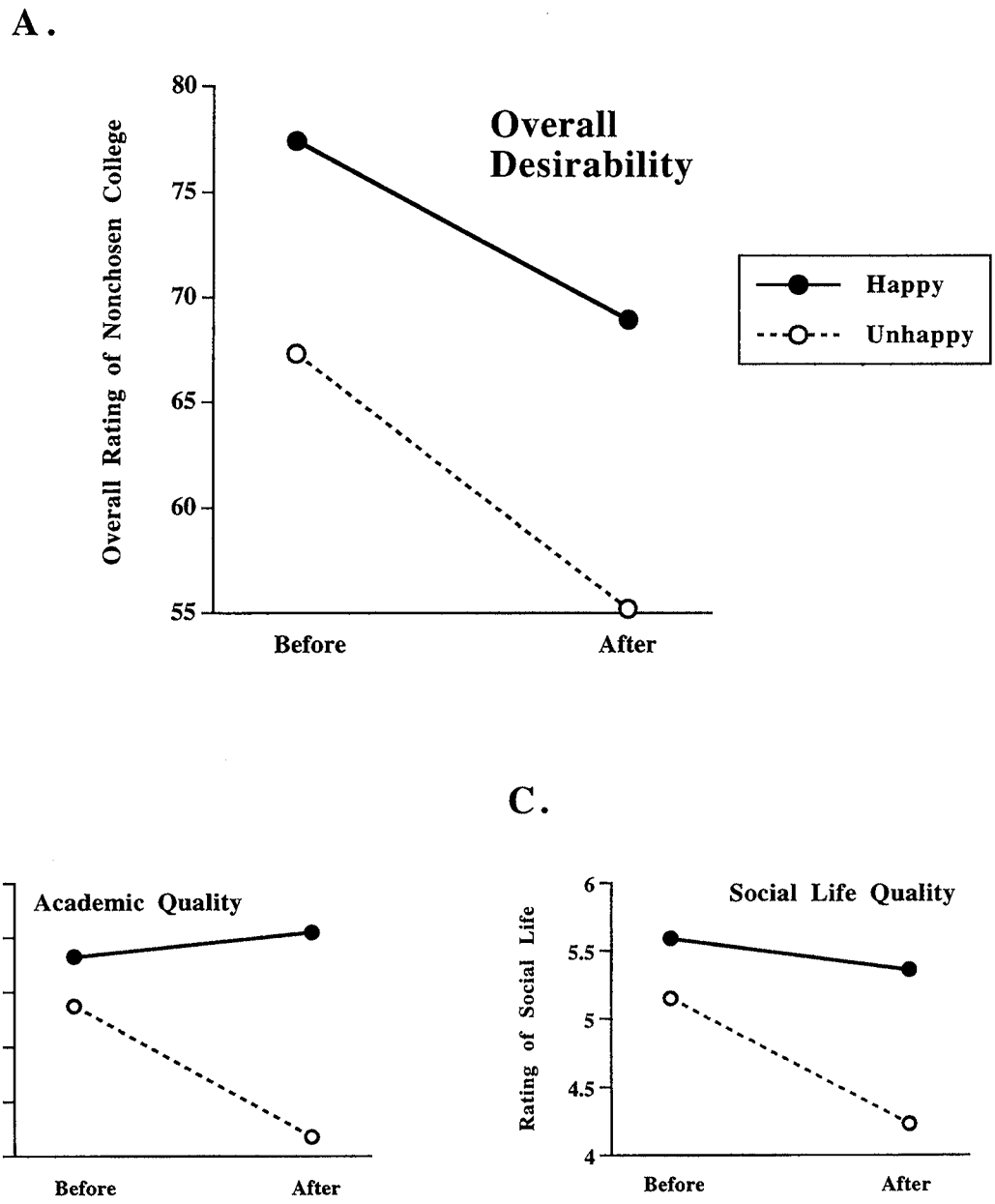

Figure 3. Changes in ratings of overall desirability (A), quality of academics (B), and quality of social life (C) of nonchosen colleges (Study 1).

it was in evaluating the "overall attractiveness of the college," and in particular the "desirability of social life" of the rejecting college, that the happy but rejected students rationalized to avoid feelings of disappointment or deprivation. Indeed, the happy students, in contrast to the unhappy ones, ended up feeling that on balance, the opportunity denied them may have been one they were fortunate to miss. (For, after all, there is more to college than academics!)

It is worth emphasizing, perhaps, that although changes in a student's evaluation of a college can be either a determinant or a consequence of that student's decision about which offer to accept, the college's decision cannot be a consequence of any change in the student's evaluation. Thus, devaluation of a rejecting college reflects not only the sole case in our study in which the student has responded to a clear and present ego threat and potential source of unhappiness but also the sole case in which we can be confident that the relevant change in evaluation was a motivational consequence rather than a decisional determinant.

The results of Study 1 provide some intriguing hints about the circumstances under which happy individuals are relatively more or less disposed than their unhappy peers to rationalize their decisions and outcomes. Again, it is our pattern of results for rejecting versus rejected colleges that is most instructive. In the former case, where ego threat is maximal, we see greater derogation of unavailable alternatives on the part of the happy students.

In the latter case, where such threat is largely absent, we see a reversal; it is the unhappy students rather than the happy ones who most engaged in such postdecisional rationalization.

These findings prompted us to conduct another study that placed our two groups of participants in a decision context that was familiar and highly involving but seemingly inconsequential for self-esteem and long-term happiness. That decision involved the selection of a fancy dessert. The design and analysis of Study 2 was modeled after Brehm's (1956) classic dissonance experiment on the postchoice spreading of alternatives, with an explicit manipulation of choice. Following the results of Study 1, as well as those of previous studies of trivial decisions (e.g., Steele, Spencer, & Lynch, 1993), we predicted that in a situation involving low hedonic states, happy students should show less of the familiar spread of alternatives than should unhappy students.

Study 2

Method

Overview

In the context of a purported marketing study, happy and unhappy participants were asked to evaluate 10 fancy desserts both before and after learning which dessert they personally would receive. For the first evaluation, all participants were presented with tempting verbal descriptions of the 10 desserts and then asked to rate the desirability of each, using a 100-point scale, and to specify their top 4 choices. At that point, participants either were asked to select between their second and third choices (*choice condition*) or were simply told which dessert they were to receive (*no-choice condition*), which always happened to be the one they had previously ranked second. For the second evaluation, participants in both conditions were given color photographs of the same 10 fancy desserts and then asked to reevaluate the desirability of each.

Participants

Forty-nine students enrolled in Introductory Psychology at a private university (24 women and 25 men) received course credit for their participation in this study. Students were again selected on the basis of their responses to the SHS (Lyubomirsky & Lepper, 1999; $\alpha = .84$), which had been presented in the context of an earlier mass-administered, omnibus questionnaire. Students' scores on the short form of the Beck Depression Inventory (Beck & Beck, 1972) had also been collected from the same mass-administered questionnaire, and students with scores of 7 and above—that is, those classified as mildly to moderately depressed—had been excluded (see Beck & Beamesderfer, 1974). Respondents who reported not liking desserts or who were on a weight-loss diet at the time of the study were similarly excluded. Participants whose composite scores were in the top or bottom quartile of the distribution ($Mdn = 5.00$) were selected for the study and recruited by telephone.[6] The 23 happy participants who agreed to participate showed a mean composite score of 6.33 ($SD = 0.41$); the 26 unhappy participants who agreed to participate showed a mean composite score of 3.48 ($SD = 0.61$).

The omnibus questionnaire used in selecting our participants had also included two scales—Rosenberg's (1965) Self-Esteem Scale ($\alpha = 0.86$) and Scheier and Carver's (1985) Life Orientation Test (an optimism scale; $\alpha = 0.84$)—measuring constructs conceptually and empirically related to happiness. The inclusion of these scales in this study, although not specifically intended for this purpose, later allowed us to pursue issues of discriminant validity.

Procedure and Materials

All participants were run individually by a female experimenter who was unaware of their self-rated happiness status. Participants were told that they would be participating in a marketing study, one in which the researchers hoped to learn about the "evaluation and decision processes involved in people's purchasing decisions." The products in question, they were told, were fancy desserts supplied by a well-known local bakery, and they would actually receive one of the desserts subsequent to the study. The experimenter went on to explain that we were interested specifically in the kinds of "verbal descriptions of desserts" that people find attractive. Participants were then asked to read enticing descriptions of 10 fancy desserts, presented in one of two randomly determined orders. The carrot cake, for example, was described as follows:

> Sweet bits of fresh carrot and a dash of cinnamon and nutmeg add spice and life to this moist, scrumptious cake, topped with rosettes of thick, sweet cream cheese frosting and walnut halves. But that's not all—the sides are studded with chopped, toasted walnuts.

The other 9 desserts, described in similarly effusive prose, included chocolate orange walnut cake, California-style cheesecake, chocolate-on-chocolate cake, poppyseed lemon pound cake, eclairs, cream puffs, lemon tarts, napoleon cake, and strawberry cream cake.

After they read all of the descriptions, participants were asked to rate the desirability of each dessert—that is, "how much you think you will like it"—using a 100-point scale (1 = *most disappointing dessert I'll ever have,* 50 = *average dessert,* 100 = *best dessert I'll ever have*). Additionally, they were specifically told that their ratings "may well have some consequences for which dessert you'll actually get." After completing the initial evaluations of the 10 desserts, participants were next asked to rank the 4 desserts they had rated as most desirable.

The experimenter noted (surreptitiously) which desserts the student had ranked second and third in attractiveness. Then, participants in the choice condition were asked to choose which dessert of a specified pair, allegedly determined by random selection of our computer "because we anticipated some desserts to be more popular than others" (but in actuality the desserts presented were the ones the particular student had ranked as second and third most desirable), they personally would like to receive. In the no-choice condition, the experimenter simply announced that the students would receive one of two specified desserts (which, of course, always happened to correspond to the participant's second and third choice), with the relevant selection allegedly determined by the computer. The experimenter then consulted the computer outcome and told each participant which dessert they would receive (which, in fact, was always the dessert the participant had ranked second highest).

On pretense of going to fetch more materials, the experimenter then left the participants for 5 min.[7] Upon her return, the experimenter informed the participants that they were "finished with the main part of the study," but that before they left, she also wanted "to get some information about how people respond to pictures, rather than verbal descriptions, of desserts." Participants were then presented with 6" × 6" (15.24 cm × 15.24 cm) color photographs of the same 10 fancy desserts and again asked to rate the desirability of each dessert using the same 100-point scale. These second,

[6] In Study 2, we were able to use a more stringent criterion for the classification of happy and unhappy participants than that used in Study 1 (i.e., selection from upper and lower quartiles rather than a simple median split) because of the larger number of participants available. (The 36 students who had participated in Study 1 composed approximately two thirds of the school's entire senior class.)

[7] Walster (1964) found that postdecisional justification processes are more clearly manifest when a delay is provided before subsequent ratings or rankings are made.

photo-based ratings constituted the final evaluations of the desserts. The introduction of the pictures, we should note, provided participants with a plausible basis for changing their evaluations without their feeling that doing so (or not doing so) reflected anything noteworthy about themselves. (This procedure also served to conceal the real focus of our concerns in the study, which, of course, involved changes in evaluation.)

The experimenter then returned to the laboratory room and asked participants to complete a short questionnaire in which they rated their present mood state—that is, how sad, joyful, depressed, and happy they were currently feeling—using the 9-point Likert scales used in Study 1 (α = .80). Participants next completed a debriefing questionnaire, received a gift certificate from a local bakery for the promised dessert, and were given a further verbal debriefing.[8] The entire procedure took approximately 30 min.

Several weeks after the completion of the study, one friend or roommate of each of the participants was contacted by telephone and asked to rate the participant on the SHS. We were able to contact either a friend or a roommate of 48 of the 49 participants in the study. The four items that constituted the scale were again combined to provide a single index.

Results

Preliminary analyses revealed no main effects or interactions involving the choice/no-choice variable. The same pattern of results was apparent regardless of whether participants thought they would be receiving their second-choice dessert rather than their third-choice dessert because of their own expressed preferences or because of the dictates of a computer; this similarity in results for choice and no-choice conditions was apparent for happy and unhappy participants alike. The lack of impact of the choice manipulation will receive further discussion below. For now we merely note that this variable is ignored in all subsequent analyses and presentations of results. Preliminary analyses further indicated that there were no main effects or interactions involving participants' sex or the order of presentation of desserts, and subsequent analyses and data presentations collapse across these variables.

Corrections for Regression and Related Artifacts

Because our primary concerns involved changes in ratings of second-choice and third-choice desserts, a potential artifact had to be addressed in the presentation and interpretation of results. That is, changes in evaluation from the initial to the final rating could be expected to occur for reasons unrelated to the processes that were the focus of our study. First, participants may have found pictures in general, pictures of particular desserts, or pictures of desserts earning particular rankings more or less attractive than the corresponding verbal descriptions of the same desserts. Second, some change from first to second rating might be expected in light of (and therefore might properly be attributed to) simple regression effects, with such regression effects presumably exerting a greater influence for second choices than third choices, because ratings for the former necessarily were more discrepant from the overall mean for all ratings. To address both of these problems simultaneously, we followed the example of Brehm (1956) by recruiting a separate sample of raters (who were not preselected for happiness or unhappiness and were never told anything about choosing or receiving any of the desserts) and having them simply provide two attractiveness ratings for each dessert, one after reading the relevant descriptions and the other after viewing the relevant pictures.

The results of this procedure revealed an expected decrease of 8.2 points (SD = 17.9 points) for second choices (i.e., the dessert that participants in all conditions were told they were to receive) and an expected decrease of 2.0 points (SD = 21.4 points) for third choices (i.e., the dessert that participants were told they were not to receive). Accordingly, in the presentation of final ratings and change scores that follow, we corrected for this artifact by adding 8.2 points and 2.0 points, respectively, to the ratings for the received (i.e., second-choice) and nonreceived (i.e., third choice) desserts. This correction, of course, does not alter the size or statistical significance of comparisons involving happy versus unhappy participants. It merely helps us to see more clearly and interpret more appropriately any apparent between-group differences.

Ratings of Received Versus Nonreceived Desserts

When we examine the changes in ratings for received versus nonreceived desserts (Figure 4A), we see the familiar spread of alternatives first noted by Brehm (1956). More specifically, participants overall showed no change in ratings of the received dessert (D = 0.00, SD = 15.60) but rated the nonreceived dessert as significantly less desirable after learning that they were not to receive it (D = −7.75, SD = 15.63). This interaction effect (Time of Rating × Received versus Nonreceived Status of Dessert) was highly significant, $F(1, 47) = 8.69$, $p < .005$.

Our particular interest, however, lies less with the aggregated results for happy and unhappy participants than with the disaggregated results for the two groups separately. When we examine the relevant means, a difference in the pattern of responses for the two groups becomes apparent. In the case of the received dessert, the results of a repeated measures ANOVA indicated a significant main effect for group, $F(1, 47) = 8.33$, $p < .006$, and a marginally significant Group × Time interaction, $F(1, 47) = 2.87$, $p < .10$. Happy participants showed a modest increase in their attractiveness ratings (D = +3.87, SD = 11.96), whereas unhappy participants actually showed a modest decrease (D = −3.43, SD = 17.76; see Figure 4B). In the case of the nonreceived dessert, once again we found a significant main effect for group, $F(1, 47) = 14.16$, $p < .0005$, and a significant Group × Time interaction, $F(1, 47) = 10.69$, $p < .002$. That is, as shown in Figure 4C, happy participants showed virtually no decrease in their attractiveness ratings (D = −0.67, SD = 12.57), whereas unhappy participants showed a very marked decrease (D = −14.01, SD = 15.59). Analysis of the hedonic relevance of these specific change scores suggests that happy participants ended up liking both desserts more than unhappy participants did and, unlike their unhappy peers, ended up showing a relatively more positive change score for the dessert they would actually receive. Only

[8] Participants' responses on the debriefing questionnaire and during the subsequent oral debriefing indicated that we had been successful in disguising the objectives of the study and thus in minimizing the impact of possible experimental demand characteristics. That is, no participants reported having guessed our concern about changes in postdecisional evaluations or having discerned the link between their responses in this study and the four ratings of happiness they had completed several weeks earlier.

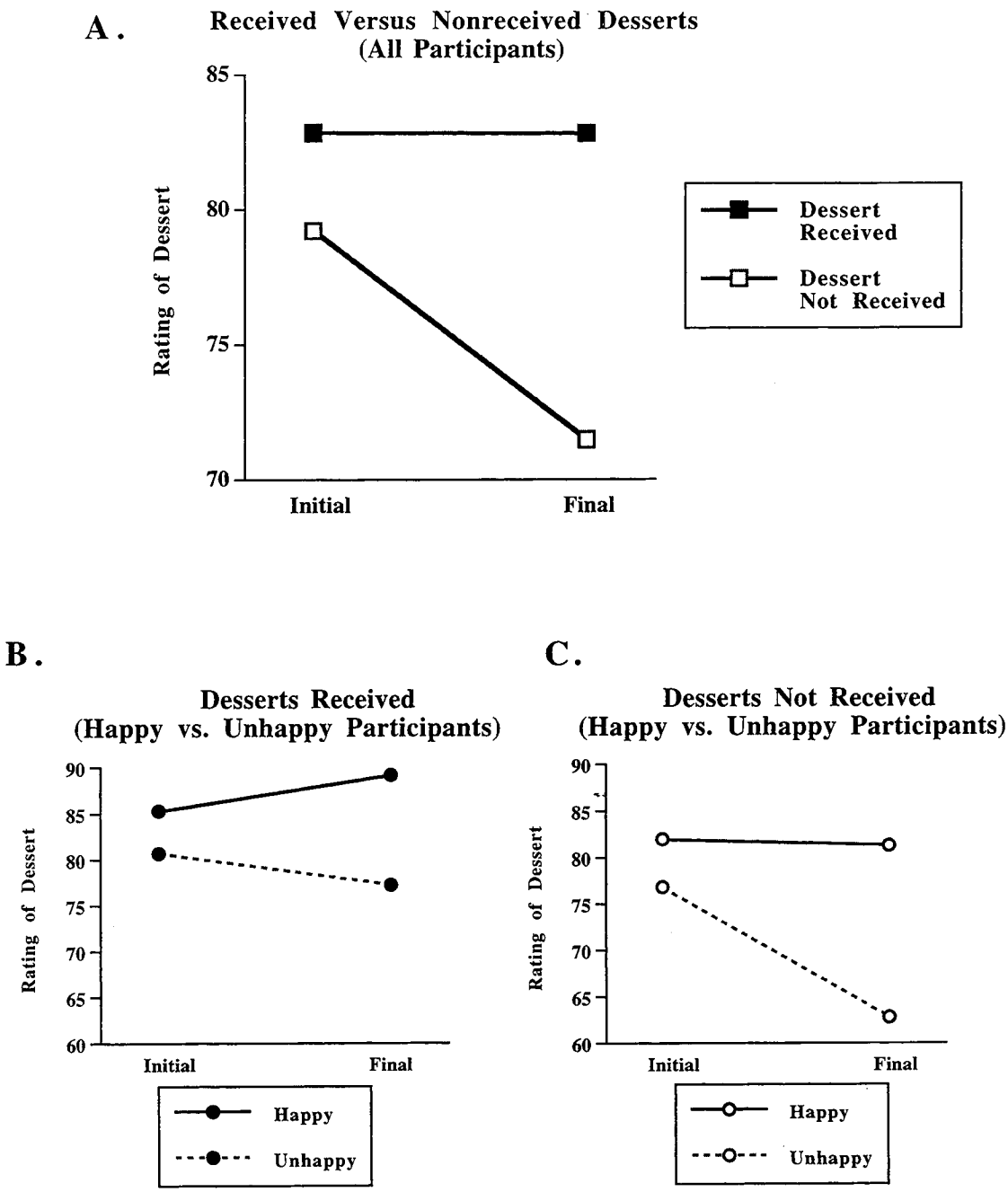

Figure 4. Changes in attractiveness of received and nonreceived desserts as a function of happiness status (Study 2).

unhappy participants ended up heavily derogating the dessert they would not receive.

Mood Ratings

The mood measure administered to participants after the final dessert ratings revealed that happy participants were in a more positive mood ($M = 7.33$, $SD = 1.05$) than were unhappy participants ($M = 5.90$, $SD = 1.52$), $t(44) = 3.89$, $p < .001$. However, because we did not assess mood before the participants had made their choices or learned their outcomes, we cannot determine to what extent these group differences simply reflected the participants' prior moods and to what extent they reflected response differences in the aftermath of the dessert allocation procedure. We were, however, able to determine whether our reported effects involving dessert ratings might have been moderated by differences in transient mood rather than in longer term, and presumably more stable, self-assessments of general happiness. When all analyses were redone using the measure of participants' mood as the

covariate, they yielded results virtually identical to the ones reported earlier. That is, all the relevant significant main effects and interactions remained significant, and the nonsignificant ones remained nonsignificant.

Peer Assessments Versus Self-Assessments of Happiness

It will be recalled that following the completion of the study, we had succeeded in contacting a friend or roommate of 48 of our 49 participants and having these "informants" rate the participants on the same four scale items that the participants had used to rate themselves. The resulting Pearson's correlation between the peers' composite ratings of happiness and the participants' composite self-ratings was .41 ($p < .001$, one-tailed). This postexperimental classification check not only provided evidence that participants' self-assessments were echoed, at least to some extent, by their peers, it also allowed us to redo our analyses in two different ways. First, we replaced the self-assessments with the peer assessments and reran our analyses using the peer assessments to classify happy and unhappy participants. Second, we excluded those participants whose peer ratings and self-ratings failed to correspond. The results, in both cases, were between-group differences virtually identical in form, although in some cases smaller in magnitude, than those reported above. Accordingly, we can be sure that our findings were not a simple methods artifact resulting from our exclusive reliance on self-reports.

Self-Esteem and Optimism as Possible Moderator Variables

An important question to be addressed is whether the effects reported thus far reflect the role of chronic happiness per se rather than self-esteem, optimism, extraversion, repression, or other currently popular individual difference constructs that intuition and previous findings alike suggest should be related to happiness (see Lyubomirsky & Lepper, 1999, for a review). Fortunately, because the first two constructs on this list were assessed in our preexperimental test battery, we are in a position to begin to respond to this question with respect to the findings of this study.

Our analytic strategy was twofold. First, we conducted the repeated measures ANOVAs once again but substituted measures of self-esteem (Rosenberg, 1965) and optimism (Scheier & Carver, 1985), respectively, for the happiness measure as the basis for classifying participants (by means of median splits; see Lyubomirsky & Ross, 1997, for similar procedures). Indeed, if our measure of subjective happiness is merely tapping other, seemingly related constructs, then the pattern of results found in this study (and illustrated in Figure 4) should be replicated, if not magnified, by using these related constructs as grouping variables. However, we should be cautious in our interpretations given that the happy and unhappy participants had been selected from extreme groups. Second, to test whether the association between happiness and responses to choice alternatives is actually moderated by related trait constructs, we conducted covariance analyses with self-esteem and optimism as covariates, respectively. Table 1 presents the relevant raw and adjusted cell means, as well as standard errors, used in these analyses.

With respect to both self-esteem and optimism, our findings were clear and conclusive. As indicated by the means displayed in the top half of Table 1, when either self-esteem or optimism was substituted for happiness as the basis for classifying participants, none of the relevant main effects or interactions involving these variables approached statistical significance. Thus, although the measures of self-esteem and optimism that we used were highly correlated with our happiness scale (rs = .41 and .58, respectively), neither succeeded at mirroring the effects associated with happiness. Furthermore, when these two measures were separately introduced as covariates, they did not account for our between-group differences (see means shown on the bottom half of Table 1). That is, for changes in ratings of both received and nonreceived desserts, analyses of covariance left our corrected means, as well as the relevant main effects and interaction effects, virtually unaltered in magnitude. Thus, neither optimism nor self-esteem proved to have independent predictive power in our study, and neither variable moderated the reported effects associated with our simple happiness composite.

Table 1
Changes in Evaluations of Chosen and Rejected Desserts as a Function of Happiness Versus Self-Esteem and Optimism (Study 2)

	Received dessert		Nonreceived dessert	
Grouping variable	*M*	*SE*	*M*	*SE*
Self-esteem (SE)				
All participants	0.00	2.23	−7.75	2.23
High SE	−0.01	3.30	−5.82	3.03
Low SE	0.00	3.02	−9.93	3.31
Optimism (Opt)				
All participants	0.00	2.23	−7.75	2.23
High Opt	+0.55	3.01	−4.78	2.97
Low Opt	−0.69	3.40	−11.38	3.29
Happiness				
All participants	0.00	2.23	−7.75	2.23
Happy	+3.87	2.49	−0.67	2.62
Unhappy	−3.43	3.48	−14.01	3.06
With SE as covariate[a]				
Happy	+4.55	3.59	+0.01	3.59
Unhappy	−4.03	3.36	−14.61	3.36
With Opt as covariate[a]				
Happy	+4.25	3.67	−0.29	3.67
Unhappy	−3.77	3.44	−14.34	3.44

[a] Adjusted means are provided from the covariance analyses, which used SE and Opt as covariates, respectively.

Discussion

In the aggregate, our happy and unhappy participants showed the familiar spread-of-alternatives phenomenon after choosing, indeed even after merely learning, which of two desserts they would receive. Nevertheless, the two groups differed in their patterns of postdecisional evaluation changes, and the relevant difference speaks to our original prediction, inspired by Study 1. That is, happy participants slightly increased their liking for the dessert they would receive, whereas unhappy participants actually decreased their liking for it, and whereas happy participants showed virtually no change in their liking for the dessert they would not receive, unhappy participants decreased their liking for

it markedly. Subsequent analyses, moreover, suggested that it was enduring differences in happiness per se, rather than the association of happiness with transient mood or with the related constructs of self-esteem or optimism, that accounted for these differences in response.

Unhappy participants thus showed the more pronounced spread of alternatives and perhaps a greater tendency to protect themselves from any potential feelings of dissonance or regret. They may have pursued a cognitive or motivational strategy that left them feeling "right" or "better off than they might have been," but the strategy also left them in a world of far less attractive dessert options (especially in the future, when all desserts would be available to all consumers) than their happier peers had available. This finding is reminiscent of the Study 1 result that although happy students heavily derogated rejecting colleges, they were much less likely than unhappy students to derogate important qualities of the colleges they turned down. Once again, happy participants passed up the opportunity to derogate a nonavailable alternative when that lack of availability (a temporary condition in the case of a dessert that could well be back on the menu tomorrow) posed no future threat to their happiness, identity, or self-esteem. Whatever cognitive, motivational, or other psychic resources might be required for rationalization, happy research participants opted not to spend them unnecessarily (see Lyubomirsky, Kasri, Zehm, & Kim, 1999).

Our readers may join us in wondering why the choice variable, given such heavy weight by dissonance researchers, proved irrelevant for both groups of participants. We cannot determine whether the spread-of-alternatives phenomenon generally depends less on the prior exercise of choice than earlier theorists had estimated, whether there is something specific about desserts (which diners often do not get to choose) that diminishes the relevance of choice, or whether our particular no-choice condition (which purportedly depended on the whims of a computer rather than a flesh-and-blood allocator) lacked some element necessary for creating choice/no-choice differences. We can merely reiterate that regardless of whether the experimental conditions seemingly favored the creation of dissonance arising from choice or the creation of reactance arising from lack of choice, the difference in postdecisional responses of happy versus unhappy participants was of the same form and magnitude. More importantly, perhaps, we can emphasize again that these null findings concerning choice versus no-choice conditions stand in marked contrast to the results of Study 1, in which the two groups' responses to rejecting versus rejected colleges showed marked differences.

Consideration of the group differences shown in our two studies turns our attention at last to the question of underlying mechanisms. Why do chronically happy and unhappy individuals differ in the way they reevaluate alternatives? Although our studies rule out the possibility that these differences are moderated by current mood, a simple positivity bias on the part of happy people, or shared variance with self-esteem or optimism (Study 2 only), they do little to clarify the reasons why such group differences emerge. Study 3 takes up this challenge. Our hypothesis, grounded in both anecdotal evidence and previous research, was that unhappy individuals are more likely than happy individuals to ruminate about the choices that they make or that they are dealt—more likely to ruminate too much and, perhaps, to do so in unproductive or maladaptive ways.

A number of recent studies have found that chronically happy individuals are less introspective and self-preoccupied, less self-conscious, and less likely to focus on their moods than unhappy individuals (Lyubomirsky et al., 1999; Lyubomirsky & Lepper, 1999; see also Veenhoven, 1988). In related research, dysphorics have been found to be marked by relatively high levels of self-consciousness, self-focused attention, and ruminative thinking (for reviews, see Ingram, 1990; Musson & Alloy, 1988; Nolen-Hoeksema, 1991; Pyszczynski & Greenberg, 1987). Our working hypothesis in Study 3 was that the group differences observed in Study 2 could be reduced or even eliminated by directly manipulating the focus of participants' attention. Specifically, we predicted that happy students instructed to focus inwardly and reflect about themselves and their feelings would display postchoice rationalization tendencies similar to those shown by our unhappy participants from Study 2. Conversely, we predicted that unhappy students instructed to divert their attention from themselves and their feelings would respond to the consequences of a choice as did our Study 2 happy participants. To test these predictions, in Study 3 we used a simple 2 (happy versus unhappy) × 2 (self-reflect versus distract) design.

Study 3

Method

Participants and Procedure

Forty-eight introductory psychology students at a public university (24 women and 24 men) received course credit for their participation in this study. Participants were selected on the basis of the same criteria used in Study 2; that is, only those whose SHS scores were in the top or bottom quartile (Mdn = 5.00) were recruited for the study (α = .85), and those who met the criteria for mild-to-moderate depression were excluded. The 24 happy students (12 men and 12 women) showed a mean composite score of 6.16 (SD = 0.36), and the 24 unhappy students (12 men and 12 women) showed a mean composite score of 3.54 (SD = 0.67).

The procedure was identical to that of Study 2 except in the following three respects. First, the no-choice manipulation was eliminated; that is, all participants were asked to choose between their second- and third-ranked desserts. Second, and more significantly, in the period between initial selections and subsequent reratings of the desserts, participants were induced to focus either on their feelings and personal characteristics (*self-reflection condition*) or on neutral images, objects, and geographical scenes (*distraction condition*). Finally, at the end of the experiment, participants were explicitly asked how satisfied they were with the choice they made (1 = *not at all satisfied*; 7 = *extremely satisfied*).

Focus Manipulation

An experimental manipulation was used to influence the focus of the participants' attention and reflection during the period immediately preceding their second ratings of the relevant desserts. Specifically, they were instructed to think about a series of 32 items (adapted from Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Morrow & Nolen-Hoeksema, 1990). In introducing this induction, we told participants that "we are interested in learning about the effects of what people are thinking about and imagining [while shopping for desserts]," and that their task would require them "to focus [their] mind on a series of ideas and thoughts" and to "use [their] ability to visualize and concentrate."

In the self-reflection condition, the 32 items required the 12 happy and 12 unhappy participants to focus on their feelings and personal at-

tributes (although they were not told to think about anything specifically negative or positive).[9] For example, participants were asked to think about "your character and who you strive to be," "why you react the way you do," and "what your feelings might mean." Although these items originally had been constructed to induce rumination in dysphoric individuals (cf. Nolen-Hoeksema, 1991), they served our present goal of achieving a persistent focus on substantive aspects of the self.[10] Although previous studies have shown that this manipulation does not appear to affect the moods, problem-solving abilities, motivation, or pessimistic thinking of individuals whose test scores fail to meet criteria for dysphoria (Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Morrow & Nolen-Hoeksema, 1990), we hypothesized that the inward focus demanded by this manipulation would produce, in all participants, self-analytical reflections of the sort we assumed to be more characteristic of unhappy individuals than of happy ones. In the distraction condition, the relevant task items required the 12 happy and 12 unhappy participants to focus externally on matters not related to emotions or the self. Thus, participants were instructed to think about "clouds forming in the sky," "the shape of the state of California," "the expression on the face of the *Mona Lisa*," or other matters similarly removed from the self.

The items in both the self-reflection and the distraction conditions had been previously rated as affectively neutral by independent coders. In each condition, participants spent exactly 8 min focusing on the 32 items. After the allotted time, the experimenter returned and asked students to rerate the 10 desserts, as in Study 2. As a manipulation check, students in both conditions were asked in a debriefing questionnaire administered at the end of the study to recall the instructions for the focusing task and to describe exactly what they had done during the allotted 8 min. Two independent judges scored the responses, which indicated that students correctly understood the instructions and had been able to direct their focus as requested for the stipulated time period.

Results

As in Study 2, our primary concern involved changes in participants' ratings of their second-choice (chosen) and third-choice (rejected) desserts. To correct for regression and other possible artifacts, we again adjusted these change scores in light of the rating changes shown by individuals who had simply furnished the two ratings without making any choices or receiving any desserts. This correction altered neither the size nor the significance of any between-group or between-condition differences to be reported.

Ratings of Chosen Versus Rejected Desserts

Examining the changes in ratings for chosen versus rejected desserts revealed the familiar spread-of-alternatives effect seen in Study 2. Overall, there was no change in ratings of the chosen dessert ($D = +0.30$ on a 100-point scale, $SD = 19.84$), but participants rated the rejected dessert as significantly less desirable after they had rejected it than they had before ($D = -13.22$, $SD = 21.10$; Figure 5A). This Time (initial vs. final) × Status of Dessert (chosen vs. rejected) interaction effect was highly significant, $F(1, 47) = 9.74$, $p < .004$.

As in the two previous studies, our primary interest lies in less aggregated results. In particular, we sought to examine the effects of our focus manipulation on the responses of happy versus unhappy students. As shown in the bottom two panels of Figure 5, the pattern of results provides clear support for our hypothesis. We found a significant effect of the focus manipulation, with no discernible difference in the pattern of responses for happy versus unhappy participants. The results of a repeated measures ANOVA showed a significant main effect for time (initial vs. final), $F(1, 44) = 19.36$, $p < .0001$, and a significant Time × Focus (self-reflection vs. distraction) interaction, $F(1, 44) = 4.27$, $p < .05$, in the case of the rejected dessert but no significant effects in the case of the chosen dessert. Importantly, neither analysis gave the slightest hint of any main effects or interactions involving happiness status.

The results of the ANOVAs are especially revealing after examining the specific mean changes in dessert ratings. We found that distracted students, happy and unhappy alike, showed little or no change in ratings for the dessert they chose ($D = +1.30$ and $+0.30$, respectively) and moderate declines in ratings for the dessert they rejected ($D = -6.47$ and -7.55, respectively; see Figure 5B). By contrast, self-reflecting participants, happy and unhappy alike, showed little or no change in ratings for the chosen dessert ($D = +0.39$ and -0.78, respectively) but a marked decline in ratings for the rejected dessert ($D = -19.22$ and -19.64, respectively; see Figure 5C). In other words, participants from neither group in either focus condition showed much change in their ratings for the dessert they opted to receive. Also, both groups' participants derogated the dessert they opted not to receive much more strongly when induced to self-reflect than when distracted. In a real sense, both groups of distracted participants in Study 3 ended up resembling the happy Study 2 participants more than the unhappy ones, whereas both groups of self-reflecting participants ended up resembling the unhappy Study 2 participants more than the happy ones.

Mood and Satisfaction Ratings

As in Study 2, the mood measure administered to participants after the final dessert ratings showed that happy students were in a more positive mood ($M = 7.27$, $SD = 0.96$) than were unhappy students ($M = 6.20$, $SD = 1.34$), $F(1, 44) = 11.53$, $p < .001$. However, the relevant ANOVA also revealed a significant main effect of the focus manipulation; that is, participants who were distracted subsequently reported a somewhat more positive mood ($M = 7.06$, $SD = 1.07$) than did those who were induced to reflect on their thoughts and feelings ($M = 6.41$, $SD = 1.39$), $F(1, 44) = 4.30$, $p < .05$. These two main effects, however, were qualified by a significant interaction, $F(1, 44) = 4.30$, $p < .05$, suggesting that the focus manipulation influenced the moods of the unhappy participants but not the moods of the happy ones. Thus, happy participants showed identical levels of positive mood whether they self-reflected or were distracted ($M = 7.27$ in both cases), whereas unhappy participants reported higher levels of positive mood after distraction ($M = 6.85$) than after self-reflection ($M = 5.55$), $t(21) = 2.69$, $p < .02$. As in the previous

[9] Thirteen of the original 45 items were deleted because they were designed to direct participants' attention to symptoms of depression or dysphoria and thus were not appropriate for our participant population.

[10] The frequently used technique of manipulating self-focus by placing participants in front of a mirror or video camera (e.g., Gibbons et al., 1985; Hull & Levy, 1979; Scheier & Carver, 1977; Strack, Blaney, Ganellen, & Coyne, 1985) was considered but ultimately rejected as inappropriate for our purposes, largely because it would have left unclear exactly what it was that participants thought or reflected about during the procedure (see also Scheier & Carver, 1980).

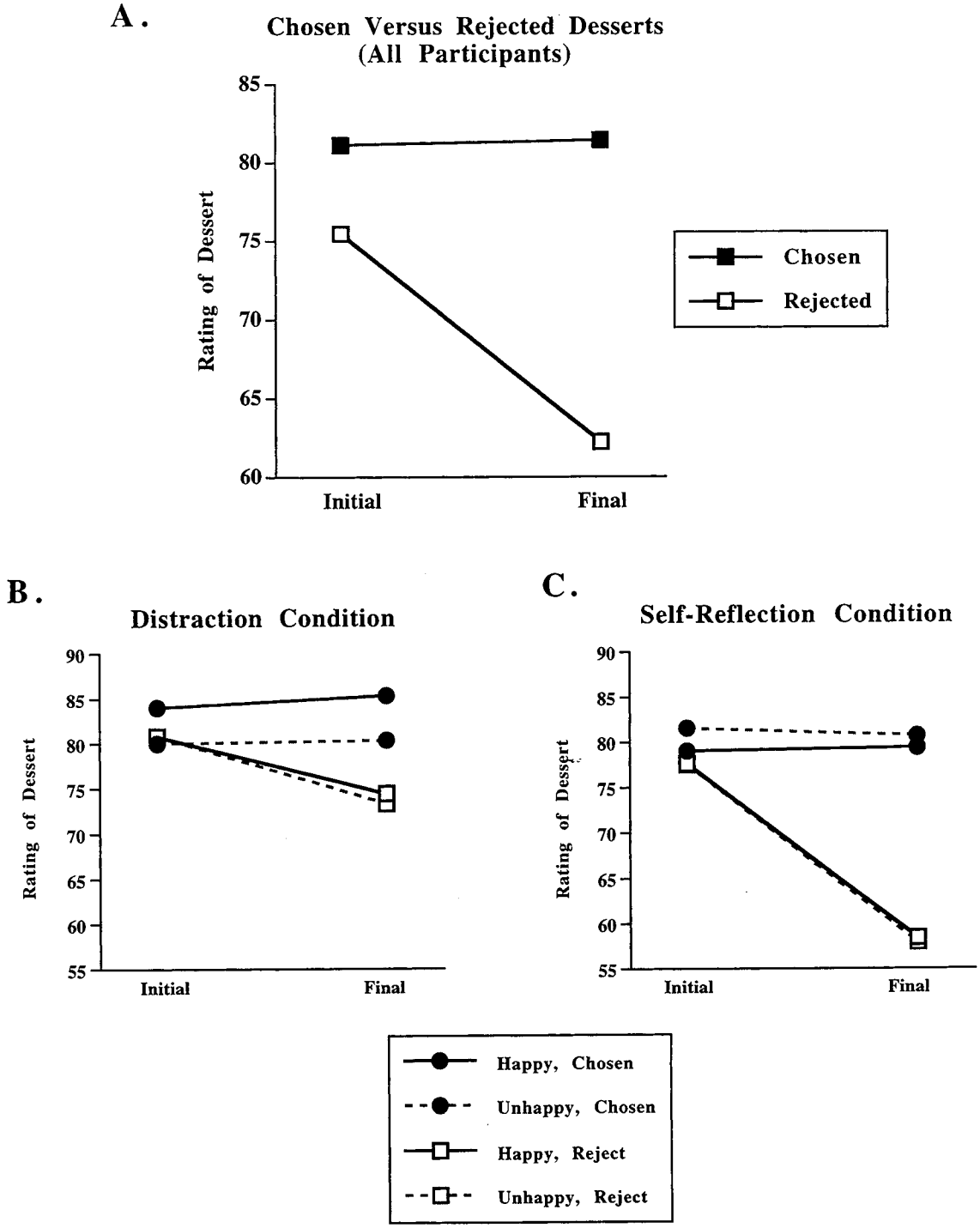

Figure 5. Changes in attractiveness of chosen and rejected desserts as a function of happiness status and focus manipulation (Study 3).

two studies, our analyses of group and condition effects were redone using participants' immediate mood as a covariate, this time to examine whether the differences in dessert ratings for the two focus conditions were moderated by differences in transient mood. Once again, this procedure produced no change in the pattern of results reported; that is, previously significant effects remained significant and nonsignificant effects remained nonsignificant.

The measure added to Study 3 to assess participants' postchoice satisfaction proved revealing. Overall, participants who were in-

duced to reflect about themselves and their feelings immediately after making their dessert choice subsequently reported less satisfaction with that choice ($M = 4.46$, $SD = 2.08$) than did those who were subjected to the distraction manipulation ($M = 5.54$, $SD = 1.28$), $F(1, 44) = 4.51$, $p < .04$. Furthermore, these satisfaction ratings proved to be significantly and positively correlated with both postdecisional ratings and changes in ratings for the chosen dessert ($r = .56$, $p < .0001$, and $r = .42$, $p < .003$, respectively). Interestingly, however, satisfaction ratings were not correlated significantly with postdecisional ratings or changes in rating for the rejected dessert ($r = .16$ and $r = .03$, respectively).

Discussion

When induced to engage in a period of self-reflection, happy students tended to derogate the nonchosen dessert, thereby matching the behavior of unhappy Study 2 participants. Conversely, when prevented by a distraction manipulation from engaging in such reflection, unhappy students showed no such derogation, thereby matching the behavior of happy Study 2 participants. The fact that differences between happy and unhappy individuals could be eliminated through direct manipulation of their focus of attention obviously is suggestive regarding underlying mechanisms. That is, it may be the inclination of unhappy individuals to analyze and relate to the self relatively inconsequential choices and outcomes and the disinclination of their happy peers to do the same that underlies our previous findings.

How might personal inclinations or situational inducements to self-reflect promote postdecisional rationalization or dissonance reduction, and how might inclinations or inductions to focus outwardly inhibit such rationalization? Several studies from the 1970s (e.g., Brehm & Wicklund, 1970; Wicklund & Ickes, 1972) suggested that self-focused attention heightens dissonance reduction by enhancing the salience of dissonant cognitions (e.g., the positive aspects of nonchosen alternatives), whereas distraction attenuates dissonance reduction by redirecting one's attention in other directions. Thinking about oneself may also serve to increase dissonance reduction by magnifying the importance attached to an otherwise minor decision, whereas distraction may further trivialize such decisions (Simon, Greenberg, & Brehm, 1995). Finally, self-awareness and self-regulation theories (e.g., Carver & Scheier, 1990; Duval & Wicklund, 1972; Hull & Levy, 1979) postulate that self-focus activates comparisons of self to relevant standards. Thus, it is not surprising that even happy individuals induced to reflect about themselves and their emotions may begin to ponder the implications of their decisions or, borrowing from Robert Frost, to consider the two roads that diverged in a wood.

We found that while self-reflection led participants to show reduced satisfaction with their choice (see also Wilson et al., 1993), it increased their tendency to derogate the alternative they rejected. This finding is significant in that it links postdecisional rationalization to an adverse hedonic consequence and thereby bolsters our primary contention that the cognitive strategies of unhappy individuals may exacerbate their unhappiness, whereas those of happy individuals enhance and preserve their happiness. In this regard, we note the negative consequences that may follow from unhappy individuals' excessive dwelling or concern about the self. Indeed, recent experiments reveal that after being outperformed by peers, unhappy students required significantly more time than happy ones to read a GRE passage on the computer and to complete a memory exam, and they showed relatively poorer reading comprehension (Lyubomirsky et al., 1999).

General Discussion

The first two studies reported in this article illustrate differences in the way chronically happy and unhappy individuals respond in the aftermath of choices that they make or that are made for them. In both studies, happy participants were relatively more inclined than unhappy participants to increase their ratings for alternatives (whether desserts or colleges) that they selected and less inclined to decrease their ratings for the alternatives that they rejected. The happy individual's world seems to be one subjectively teeming with attractive possibilities. Unhappy participants, by contrast, were much more likely than happy ones to devalue aspects of the available dessert or college that they rejected. Their world seemingly is one in which chosen and nonchosen alternatives alike appear relatively unattractive, but solace is available (and dissonance is reduced) in the conviction that although their selected options were somewhat mediocre, the alternatives would have been even worse. In short, both groups' responses were of a sort likely to maintain and even enhance the differences in their chronic affective states.[11]

In this context, key differences in the findings of Study 1 and Study 2 merit further emphasis. For ease of comprehension, Table 2 summarizes our results in these two studies. Whereas unhappy participants devalued the outcomes they rejected but not the ones they were denied, happy participants showed the reverse pattern of responses. When it came to the relatively inconsequential matter of desserts, they did not devalue the attractive alternatives denied them by the impersonal and nonevaluative computer any more than they devalued the attractive alternatives that they themselves had rejected. When it came to the highly consequential and ego-threatening matter of a college decision, however, it mattered greatly whether the rejecting in question had been done by the evaluating student or by an evaluating school. Only in the latter case did happy participants engage in the devaluation or derogation required to protect their esteem and/or deal with any dissonance arising from the fact that their best efforts had failed to win an opportunity they sought. Thus, these results suggest that our two groups of participants were attending to or ignoring rather different hedonic concerns. To happy participants, apparently, the choice of a dessert seemed trivial and irrelevant to well-being (Steele et al., 1993; see also Simon et al., 1995), especially because they were free to enjoy any of the desserts in the future and were not really relinquishing anything (Jecker, 1968). By contrast, in learning that a desirable college has rejected them, happy participants were not only deprived of a potentially attractive alternative

[11] It should be noted that there is not a hint in either study's findings that postdecisional reactance (or regret) was actively taking place. That is, neither happy nor unhappy participants were inclined to downgrade the alternatives that they chose or received or to elevate the alternatives that they relinquished or were denied. The reactance theory predictions were thus not supported, although our lack of multiple predecisional ratings, coupled with the use of a postdecisional interval that may have been too short to induce regret (see Walster, 1964), may have reduced our chances of finding evidence for the postulated process.

Table 2
Summary of Results: Changes in Evaluations of Colleges and Desserts (Study 1 and Study 2)

Type of choice	Status of choice alternative		
	Elected	Rejected	Precluded
Trivial (desserts)			
Happy	No change	No change	—[a]
Unhappy	No change	Decrease	—[a]
Important (colleges)			
Happy	Increase	No change	Decrease
Unhappy	No change	Decrease	No change

Note. Elected = chosen college (Study 1) or received dessert (Study 2). Rejected = nonchosen college (Study 1) or nonreceived dessert (Study 2). Precluded = rejecting college (Study 1 only). Dashes indicate the category was not applicable.
[a] Changes in evaluations of desserts denied to participants by the computer in the no-choice condition of Study 2 could plausibly fall under the precluded alternative category; however, unlike colleges, desserts do not have the power to reject. Because of this fundamental difference between evaluations of rejecting colleges and denied desserts, the latter were omitted from the table.

but were made vulnerable in the face of threat to their feelings of identity and self-esteem (see Josephs, Larrick, Steele, & Nisbett, 1992; Steele et al., 1993). Accordingly, although happy participants felt no need to rationalize the lost availability of a dessert, they decisively dealt with the threat and disappointment of the lost opportunity to attend an attractive college—especially the one that had been their first choice—by appropriately readjusting their evaluations and preferences. Unhappy participants, by contrast, apparently felt and acted on a need to rationalize the nonavailability of an option (even one occasioned by the allocation of a computer rather than their own choice) when the stakes were merely one fancy dessert or another. Indeed, when it came to the more important but also far more daunting task of dealing with a college rejection, their coping strategies proved suspect. Unlike their happier peers, they did little to reduce their dissonance, disappointment, and threat to self-esteem. In fact, by derogating the colleges they rejected, and even in tending to reevaluate upward the colleges that rejected them, they seemingly increased their vulnerability to such feelings.

The findings of Study 3 served mainly to shed light on mediators relevant to the two previous studies. Instructions that served to focus thinking inwardly led happy individuals, as well as unhappy ones, to show responses reminiscent of those shown by unhappy participants in Study 2. Conversely, instructions that distracted participants from thinking about themselves and precluded rumination led unhappy individuals, as well as happy ones, to show responses reminiscent of those shown by happy participants in Study 2. These results are encouraging, especially in light of the odds that when prompted, happy individuals would reflect on happy thoughts. The findings also raise a number of provocative questions about the habitual thinking patterns of chronically happy and unhappy people. For example, do happy individuals preserve their positive biases and illusions (Taylor & Brown, 1988) by maintaining some psychological distance from the potentially threatening meanings and implications of everyday events or even from deep or abstract issues, such as life goals or the question of good versus evil? (cf. Kunda, 1990). Is it possible to be both happy and deeply self-reflective—for example, by actively engaging in the world through productive, absorbing activities (Csikszentmihalyi, 1990) or by focusing on positive thoughts (Matlin & Gawron, 1979)? The findings of Study 3 invite us to ponder and investigate these questions (even at the cost, perhaps, of some everyday happiness).

Questions and Limitations

One question raised by our findings concerns the relationship between enduring happiness and transient mood. It is noteworthy that although preexperimental differences in mood could be seen in the two groups, controlling for these initial group differences (i.e., by using mood as a covariate) did not significantly change our results. Whereas such statistical procedures cannot definitively rule out the mood-moderation hypothesis, a number of related findings cast further doubt on this possibility. First, a collateral research project (Lyubomirsky, 1994) has shown that even when the immediate moods of unhappy individuals are elevated to the levels generally shown by happy ones or, conversely, when the moods of happy individuals are depressed to the levels of unhappy individuals, group differences still remain in responses (to positive or negative social comparison information). Also, a number of studies (Lyubomirsky & Lepper, 1999) have shown that although enduring happiness is highly stable over time, mood is not; furthermore, the correlations between enduring happiness and transient mood tend to vary considerably from one study to the next. The capacity of longer term happiness to predict response differences better than short-term mood is thus all the more impressive.

An important possible limitation of at least two of our studies arises from our heavy reliance on self-reporting in classifying our participants. Every researcher who has studied happiness has had to grapple with the problem of how to measure this seemingly elusive and intangible construct (cf. Argyle, 1987; Diener, 1984; Freedman, 1978; Myers, 1992; Myers & Diener, 1995). Indeed, one writer (cited in Freedman, 1978) ridiculed the scientific study and measurement of happiness, claiming that it is "demeaning and mean-spirited" (p. 7). Because no gauge of an immediate affective "temperature," much less of an enduring climate, exists (although psychophysiological measures show some promise; e.g., Davidson, 1992; Levenson, 1992; cf. Zajonc & McIntosh, 1992), the technique of self-nomination (coupled with peer nominations in Study 2) seemed, in spite of its limitations and potential sources of confounding, the only viable solution to this problem. The exclusion of dysphoric individuals reassured us, as well, that our unhappy participants were not, in fact, mildly or clinically depressed. Moreover, because happiness is a subjective construct, it may be well to heed the words of Publilius Syrus, who 2,000 years ago wrote, "The happy man is not he who seems thus to others, but who seems thus to himself." It should be noted as well that the use of weak and imperfect measures of happiness is likely to increase variance resulting from noise and thus obscure differences that might be seen more clearly with more discriminating measures of happiness. In a sense, findings of clear and consistent differences between self-rated happy and unhappy participants in these studies serve to reassure one of the validity and reliability of the measures that were used.

Somewhat linked to the issue of self-report is that of the relationship of self-rated happiness to other relevant individual difference dimensions. Consistently strong correlations have, in fact, been found between happiness and variables such as self-esteem, optimism, extraversion, and neuroticism (e.g., Campbell et al., 1976; Costa & McCrae, 1980; Lyubomirsky & Lepper, 1999; Lyubomirsky & Ross, 1997; Seligman, 1991). Such correlations, however, are not perfect and leave much of the variance in the relationship unexplained. Indeed, we are encouraged by our results in Study 2, as well as by earlier findings (Lyubomirsky & Ross, 1997), showing that differences between happy and unhappy individuals remain even after such related variables as self-esteem and optimism are controlled. The roles of extraversion and neuroticism serve as other cases in point. Extraverts, like happy people, appear to be more sensitive to reward and thus may experience more positive emotions, whereas neurotics, like unhappy people, appear to be more sensitive to punishment and thus may be inclined toward negative emotions (Gray, 1991; see also Diener et al., 1999). However, as noted above, the positivity of one's affective state does not provide a satisfactory account of the pattern of results in our three studies. Whether such related constructs may serve as necessary or sufficient conditions for happiness remains a topic for future research, as does the nature of the mechanisms that underlie the relationships in question (e.g., see Lyubomirsky & Lepper, 1998).

Conclusions

The research reported in this paper shows that the ways in which people think about options and outcomes involved in the exercise and restriction of choice (and hence in the exercise of dissonance reduction or the experience of reactance and regret) have significant hedonic consequences. Our findings begin to elucidate subtle and not-so-subtle differences in the cognitive and motivational strategies used by happy and unhappy individuals in the aftermath of choice, and they suggest how those differences may support the relevant disparity in well-being and self-esteem. In particular, our findings caution us to pay careful attention to the hedonic stakes involved for the individuals in question and to recognize that the most successful strategy for hedonic management may lie in being slow to see threats to happiness or self-esteem but responding decisively when such threats are significant and undeniable.

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