

Counting Blessings Versus Burdens: An Experimental Investigation of Gratitude and Subjective Well-Being in Daily Life

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The effect of a grateful outlook on psychological and physical well-being was examined. In Studies 1 and 2, participants were randomly assigned to 1 of 3 experimental conditions (hassles, gratitude listing, and either neutral life events or social comparison); they then kept weekly (Study 1) or daily (Study 2) records of their moods, coping behaviors, health behaviors, physical symptoms, and overall life appraisals. In a 3rd study, persons with neuromuscular disease were randomly assigned to either the gratitude condition or to a control condition. The gratitude-outlook groups exhibited heightened well-being across several, though not all, of the outcome measures across the 3 studies, relative to the comparison groups. The effect on positive affect appeared to be the most robust finding. Results suggest that a conscious focus on blessings may have emotional and interpersonal benefits.

Reflect on your present blessings, on which every man has many, not on your past misfortunes, of which all men have some.

—Charles Dickens (M. Dickens, 1897, p. 45)

The construct of gratitude has inspired considerable interest in the general public. The prevalence of books targeted to general audiences on the topic (Breathnach, 1996; Hay, 1996; Miller, 1995; Ryan, 1999; Steindl-Rast, 1984; Turner, 1998; Van Kaam & Muto, 1993) testify to this concept's widespread appeal. Following a similar format, these popular books generally consist of reflections on the value of gratefulness, along with strategies for cultivating an attitude of gratitude. The essential message of these volumes is that a life oriented around gratefulness is the panacea for insatiable yearnings and life's ills. Grateful responses to life, we are told, can lead to peace of mind, happiness, physical health, and deeper, more satisfying personal relationships. Although intuitively compelling, many of the general claims in popular books concerning the power of a grateful lifestyle are speculative and as yet scientifically untested. In one popular book on gratitude, for instance, the author asserts that "Whatever we are waiting for—peace of mind, contentment, grace . . . it will surely come to us, but only when we are ready to receive it with an open and grateful heart" (Breathnach, 1996).

Gratitude has also had a long past in the history of ideas. Across cultures and time, experiences and expressions of gratitude have

been treated as both basic and desirable aspects of human personality and social life. For example, gratitude is a highly prized human disposition in Jewish, Christian, Muslim, Buddhist, and Hindu thought (Carman & Streng, 1989). Indeed, the consensus among the world's religious and ethical writers is that people are morally obligated to feel and express gratitude in response to received benefits. Despite such widespread exhortations, the contribution of gratitude to health, well-being, and overall positive functioning remains speculative and without rigorous empirical confirmation. Contemporary research on gratitude is still in a fledgling state (Emmons & McCullough, in press; McCullough, Emmons, & Tsang, 2002). Our primary purpose in this set of studies is to examine the influence of grateful thinking on psychological well-being in daily life and thereby put to the test popular and classical assumptions concerning the benefits of gratitude.

On the Meaning of Gratitude

Gratitude defies easy classification. It has been conceptualized as an emotion, an attitude, a moral virtue, a habit, a personality trait, or a coping response. The word *gratitude* is derived from the Latin root *gratia*, meaning grace, graciousness, or gratefulness. All derivatives from this Latin root "have to do with kindness, generosity, gifts, the beauty of giving and receiving, or getting something for nothing" (Pruyser, 1976, p. 69). The object of gratitude is other-directed—persons, as well as to impersonal (nature) or nonhuman sources (e.g., God, animals, the cosmos; Solomon, 1977; Teigen, 1997). Although a variety of life experiences can elicit feelings of gratitude, prototypically gratitude stems from the perception of a positive personal outcome, not necessarily deserved or earned, that is due to the actions of another person. Gratitude has been defined as "the willingness to recognize the unearned increments of value in one's experience" (Bertocci & Millard, 1963, p. 389), and "an estimate of gain coupled with the judgment that someone else is responsible for that gain" (Solomon,

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1977, p. 316). The benefit, gift, or personal gain might be material or nonmaterial (e.g., emotional or spiritual).

As an emotion, gratitude is an attribution-dependent state (Weiner, 1985) that results from a two-step cognitive process: (a) recognizing that one has obtained a positive outcome, and (b) recognizing that there is an external source for this positive outcome. Lazarus and Lazarus (1994) argued that gratitude is one of the "empathic emotions" whose roots lie in the capacity to empathize with others. The core relational theme associated with gratitude is recognition or appreciation of an altruistic gift. Gratitude is a complex state that belongs to the category of affective-cognitive conditions (Clore, Ortony, & Foss, 1987) in which both affect and cognition are predominant-meaning components of the term.

Gratitude, Happiness, and Well-Being: Mechanisms of Association

There are reasons to believe that experiences of gratitude might be associated—perhaps even in a causal fashion—with happiness and well-being. Researchers, writers, and practitioners have all speculated that gratitude possesses happiness-bestowing properties. Chesterton (1924) contended that "gratitude produced . . . the most purely joyful moments that have been known to man" (p. 114). Several theorists and researchers (e.g., Lazarus & Lazarus, 1994; Mayer, Salovey, Gomberg-Kaufman, & Blainey, 1991; Ortony, Clore, & Collins, 1986; Weiner, 1985) have noted that gratitude typically has a positive emotional valence.

Initial research suggests that gratitude is a moderately pleasant and activating emotion. Research has shown that gratitude is a pleasant state and is linked with positive emotions including contentment (Walker & Pitts, 1998), happiness, pride, and hope (Overwalle, Mervielde, & De Schuyter, 1995). In research on the scaling of emotion terms, gratitude tends to load on pleasantness and activation factors (Mayer et al., 1991; Reizenzein, 1994). In an empirically derived taxonomy of emotion terms, gratitude was clustered in a category of positive, interpersonal feelings that included admiration, respect, trust and regard (Storm & Storm, 1987). In similarity judgments of emotions, thankfulness is rated as highly similar to joy and contentment, and as highly dissimilar to contempt, hate, and jealousy (Schimmack & Reizenzein, 1997).

Gratitude was 1 of 50 emotion terms included in Davitz's (1969) study of the structure of emotional meaning. Forty subjects rated the relevance of over 500 descriptive statements designed to capture various elements of emotional experiences. Twelve clusters of emotion meaning were identified, on four of which gratitude loaded highly: activation, comfort/harmony, moving toward others, and enhancement/expansion of self. In addition to its merit as an intrinsically rewarding state, gratitude may lead to other positive subjective experiences. In a recent Gallup (1998) survey of American teens and adults, over 90% of respondents indicated that expressing gratitude helped them to feel "extremely happy" or "somewhat happy." Lastly, McCullough et al. (2002) found that dispositional gratitude was related to, but distinct from, trait measures of positive affect, vitality, optimism, envy, depression, and anxiety. Although gratitude overlaps with other positive feelings, it also possesses a unique pattern of appraisals that distinguishes it from happiness (Weiner, 1985).

Savoring the Positive Circumstances of Life

A grateful response to life circumstances may be an adaptive psychological strategy and an important process by which people positively interpret everyday experiences. The ability to notice, appreciate, and savor the elements of one's life has been viewed as a crucial determinant of well-being (Bryant, 1989; Janoff-Bulman & Berger, 2000; Langston, 1994). Frijda (1988) stated that "adaptation to satisfaction can be counteracted by constantly being aware of how fortunate one's condition is and how it could have been otherwise, or actually was otherwise before . . . enduring happiness seems possible, and it can be understood theoretically" (p. 354).

The personal commitment to invest psychic energy in developing a personal schema, outlook, or worldview of one's life as a "gift" or one's very self as being "gifted" holds considerable sway from the standpoint of achieving optimal psychological functioning. Indeed, numerous groups have absorbed this insight. For example, many religiously oriented events such as reflection days or scheduled week-long retreats have as a recurring theme the idea of a gift (e.g., those influenced by Jesuit spirituality) as do many self-help groups and organizations (e.g., Alcoholics Anonymous). The regular practice of grateful thinking, then, should lead to enhanced psychological and social functioning.

Gratitude and Well-Being: Correlation or Causality?

Foundationally, research on gratitude and well-being must address the issue of whether gratitude—whether in the context of savoring positive life circumstances, coping with negative life circumstances, or trying to counteract negative emotions—is a cause of well-being, per se, or merely a moderately positive and active emotion that people with high well-being frequently experience. Of course, the most direct and unambiguous way to determine whether gratitude exerts a causal effect on happiness and well-being would be in the context of experimental studies in which gratitude was manipulated and its effects on measures of well-being were observed.

Purpose of the Present Studies

In the spirit of understanding the link between gratitude and happiness, the purpose of this research is to experimentally investigate the effects of a "grateful outlook" on psychological and physical well-being. More specifically, we address whether relative to focusing on complaints or on neutral life events, a focus on "counting one's blessings" leads to enhanced psychological and physical functioning. Drawing together theoretical statements, popular beliefs, and previous empirical findings, we predict that self-guided exercises designed to induce a state of gratitude will lead to heightened well-being over time, relative to a focus on hassles, downward social comparisons, or neutral life events. In three studies, we randomly assigned participants to different experimental conditions and then had them keep daily or weekly records of their positive and negative affect, coping behaviors, health behaviors, physical symptoms, and overall life appraisals. Because we are inducing people to dwell on the favorable, to appreciate the benefits that others provide, and hence reflect on the

benevolence of others, we hypothesize that those in the gratitude-focused group would show enhanced psychosocial functioning relative to persons in the hassles and life events groups (Study 1), hassles and downward social comparison groups (Study 2), and to a true control group (Study 3). In the first two studies the participants are college students, whereas in Study 3 we recruited adults with congenital and adult-onset neuromuscular diseases (NMDs) to increase the potential generalizability of the results.

Although we believe we have sketched a compelling case for the benefit conferring effect of gratitude, in our view this relationship is neither inevitable nor unequivocal. Although gratitude as an emotion has been shown to covary with other positive affective states (Mayer et al., 1991) and has generally been portrayed as a virtue in the moral philosophy literature, attention has also been drawn to its negative side. To be grateful means to allow oneself to be placed in the position of a recipient—to feel indebted and aware of one's dependence on others. Gratitude has an obligatory aspect. People are expected to repay kindnesses. Most people experience indebtedness as an unpleasant and aversive psychological state (Greenberg & Westcott, 1983). Thus, making people aware of the things in their lives to be grateful for might increase their recognition of the need to reciprocate, and people may resent these obligations and even report strong negative feelings toward their benefactors, even as extreme as hatred (Elster, 1999).

Another reason why our predictions are not obvious has to do with the observation that people are characterized by baseline levels of happiness. Set-point theory (Diener & Diener, 1996; Lykken, 1999) maintains that people's long-term levels of happiness are relatively stable and vary only slightly around genetically endowed levels. The degree to which well-being evaluations can be altered through short-term psychological interventions and sustained over time remains to be seen. If there are chronic baseline levels of affect, then raising the level of affect beyond a person's set point may be difficult. Thus, we believe this research represents a particularly strong test of the happiness-inducing potential of gratitude. If it is possible to demonstrate that there are significant effects of a brief intervention to induce gratitude, then the potential for a longer, more sustained effort would exist.

Study 1

Method

Participants

The sample consisted of 201 undergraduate participants (147 women, 54 men) enrolled in a health psychology class in a large, public university. They participated to fulfill the experiential learning component of the course. Of these, 9 were dropped from data analysis because of missing or incomplete data, leaving a total of 192 participants. Students were given an alternative of roughly equal time commitment to not participating in the research; only one opted for the alternative.

Procedure

At the beginning of the academic quarter, participants were given a packet of 10 weekly reports. The packets were organized into three different clusters, representing the three experimental conditions, and were randomly distributed during the second class session. In the gratitude condition, participants were provided with the following instructions:

There are many things in our lives, both large and small, that we might be grateful about. Think back over the past week and write down on the lines below up to five things in your life that you are grateful or thankful for.

Examples of gratitude-inducing experiences listed by participants were as follows: "waking up this morning," "the generosity of friends," "to God for giving me determination," "for wonderful parents," "to the Lord for just another day," and "to the Rolling Stones." In the hassles condition, they were told the following:

Hassles are irritants—things that annoy or bother you. They occur in various domains of life, including relationships, work, school, housing, finances, health, and so forth. Think back over today and, on the lines below, list up to five hassles that occurred in your life.

Examples of hassles listed by participants were as follows: "hard to find parking," "messy kitchen no one will clean," "finances depleting quickly," "having a horrible test in health psychology," "stupid people driving," and "doing a favor for friend who didn't appreciate it." In the events condition, they were asked the following:

What were some of the events or circumstances that affected you in the past week? Think back over the past week and write down on the lines below the five events that had an impact on you.

Examples of events generated by participants were "talked to a doctor about medical school," "learned CPR," "cleaned out my shoe closet," "flew back to Sacramento," and "attended Whole Earth Festival." Subsequent coding of these events as positive, negative, or neutral revealed that 40% were rated as pleasant, 30% as unpleasant, and 30% as neutral. Given this balance, it would appear that we were successful in creating a reasonably neutral control condition. There were a total of 65 participants in the gratitude condition, 64 in the hassles group, and 67 in the events condition.

These separate instructions were written on the weekly report, followed by five blank lines for participants to list blessings, hassles, or life events. To reduce potential experimental demand, the listing of gratitudes, hassles, or life events was made at the end of each weekly report following the other ratings. Reports were handed in at Monday's class to ensure compliance. If participants were unable to turn in the form Monday morning, they were instructed to turn them in as soon thereafter as possible. After the forms were passed out, each set of ratings were described to participants and any questions they had concerning the procedure were answered.

Well-Being Ratings

In addition to the listing of blessings, hassles, or life events, the weekly form included ratings of mood, physical symptoms, reactions to social support received, estimated amount of time spent exercising, and two global life appraisal questions. The 30 affect terms were as follows: *interested, distressed, excited, alert, irritable, sad, stressed, ashamed, happy, grateful, tired, upset, strong, nervous, guilty, joyful, determined, thankful, calm, attentive, forgiving, hostile, energetic, hopeful, enthusiastic, active, afraid, proud, appreciative, and angry*. Items were chosen on the basis of being commonly occurring affective states (Watson, Clark, & Tellegen, 1988) as well as specific gratitude-related (*thankful, appreciative*) feelings. Participants were asked to rate the extent to which they have experienced each feeling during the past week on a scale from 1 (*not at all*) to 5 (*extremely*).

Physical symptoms. We assessed physical symptoms by having participants check off whether they had experienced any of the following sensations: headaches, faintness/dizziness, stomachache/pain, shortness of breath, chest pain, acne/skin irritation, runny/congested nose, stiff or sore muscles, stomach upset/nausea, irritable bowels, hot or cold spells, poor

appetite, coughing/sore throat, or other. Space was also provided for participants to write in any unlisted symptoms they may have experienced. A symptom measure was created by summing the 13 items within each weekly report. We have used this measure in previous research and it is a reliable and valid index of self-perceived health status (Elliot & Sheldon, 1998; Emmons, 1992; Pennebaker, 1982).

Reactions to aid. As one additional way to measure grateful emotions in daily life, we assessed various reactions to help-giving. This seemed particularly appropriate given that the prototypical situation in which gratitude is felt is in response to benefits provided. On the weekly form, participants were asked to indicate how they had coped with the most serious problem with which they were concerned during the week. Among the coping options listed, the most relevant ones pertinent to this study were as follows: accepted sympathy from someone, talked to someone about how they were feeling, or received concrete help or advice from someone. If they answered "yes" to any of these, they were then asked to rate how they felt toward the person who provided the assistance using the following adjectives: *grateful, annoyed, embarrassed, understood, surprised, glad, frustrated, and appreciative*. These ratings were made on a 5-point scale ranging from 1 = *very slightly or not at all* to 5 = *extremely*. We subsequently summed *grateful, appreciative, understood, and glad* into a composite ($\alpha = .92$).

Global appraisals. We included two questions on the weekly form to assess both concurrent and prospective overall well-being. Participants were asked to rate how they felt about their life as a whole during the week, on a -3 to +3 scale, anchored with the adjectives *terrible* and *delighted* (modeled after Andrews & Withey, 1976). A second question asked participants to rate their expectations for the upcoming week, also on a -3 to +3 scale, with the endpoints labeled *pessimistic, expect the worst* and *optimistic, expect the best*.

Results

Data Reduction

For each of the 9 weeks during which follow-up surveys were collected, we aggregated people's scores on the three adjectives related to gratitude (*grateful, thankful, and appreciative*) to derive a single measure of mean weekly gratitude. These three adjectives were highly correlated, with internal consistency reliability (Cronbach's alpha) estimates ranging from .86 to .92. These three-item composites were aggregated to form a single 9-week composite measure of gratitude. Similar 9-week composites were created for each of the 27 discrete affects. We omitted the first weekly report because the well-being items on the report were answered prior to the gratitude listing.

We also calculated mean 9-week composites of positive and negative affect by submitting the 9-week composites of the 27 discrete affects to a maximum-likelihood factor analysis with oblimin rotation ($\Delta = 0$).¹ Five factors were extracted with eigenvalues greater than 1.0, but eigenvalues dropped precipitously from the second to the third factor (from 7.4 to 1.3), so we concluded that only two factors were necessary to describe the interrelations among the 27 9-week composite affects. Therefore, we reconducted the factor analysis, specifying that only two factors be extracted. These two factors accounted for 59% of the variance in the 27 9-week composite affects. The first factor, which accounted for 33% of the variance, was clearly a measure of positive affect, with all positive affects loading greater than .50 on this factor and no loadings greater than .30 with any of the negative

affects. The second factor, which accounted for 26% of the variance, was clearly a measure of negative affect, with all of the negative affects loading greater than .60 on this factor and no loadings greater than .30 with any of the positive affects. Despite our use of an oblique rotation method, the positive affect and negative affect factor scores were virtually orthogonal, $r(N = 192) = -.04, p > .05$.

Manipulation Check

We conducted a one-way analysis of variance (ANOVA), with the 9-week mean gratitude rating as the dependent variable and the three experimental conditions (gratitude, hassles, events) as the three levels of the independent variable to determine whether the three conditions elicited differential amounts of gratitude across the 9-week follow-up period. The means and standard deviations of the 9-week composite gratitude and the 9-week composite positive and negative affect factors appear in Table 1. The main effect for condition was significant, $F(2, 189) = 4.69, p = .01$. A post hoc Scheffé's test revealed that the gratitude condition elicited more gratitude ($M = 10.16, SD = 1.93$) than did the hassles condition ($M = 9.08, SD = 1.95$), $p < .05$. Neither the gratitude nor the hassles conditions elicited significantly different amounts of gratitude than did the events condition ($M = 9.58, SD = 2.15$), $ps > .05$. Effect sizes (Cohen's d) were 0.56 for the mean difference between the gratitude and hassles conditions, 0.28 for the mean difference between the gratitude and neutral events conditions, and 0.24 for the mean difference between the neutral events and hassles conditions. Thus, relative to the neutral events condition, the gratitude and hassles conditions had nearly equal and opposite effects (i.e., $SD = .24$ and $-.28$, respectively) on daily levels of gratitude. However, participants in the gratitude condition did not differ significantly from participants in the hassles or events condition on either the positive or negative affect factors.

Global Appraisals and Health Measures

The mean ratings for the two global well-being items, amount of exercise, and physical symptoms are shown in Table 2. There was a significant main effect for the ratings of one's life as a whole and expectations concerning the upcoming week: Participants in the gratitude group rated their life more favorably on these two items than did participants in the hassles group or events group (group means and F s can be found in Table 2). The gratitude-group participants experienced fewer symptoms of physical illness than those in either of the other two groups. Lastly, there was a main effect for hours of exercise: People in the gratitude condition spent significantly more time exercising (nearly 1.5 hr more per week) than those in the hassles condition.

¹ These results were nearly identical to the results obtained when using principal components, although the maximum likelihood method is typically preferred for such uses.

Reactions to Aid

Grateful emotions in response to aid giving were significantly associated with higher ratings of joy and happiness² aggregated over the 9-week period ($r_s = .41$ and $.42$, respectively, $p < .01$). These correlations were computed across all three conditions. The gratitude variable was also associated with more favorable life appraisals ($r = .22$, $p < .01$) and with more optimism concerning the upcoming week ($r = .24$, $p < .01$). In contrast, feeling annoyed, embarrassed, surprised, or frustrated in response to aid bore no relationship with these outcome measures. These data indicate that grateful responses to help-giving are associated with more favorable overall evaluations of well-being.

Discussion

There appeared to be some positive benefits for well-being specific to the gratitude condition in Study 1. Relative to the hassles and life events groups, participants in the gratitude condition felt better about their lives as a whole, and were more optimistic regarding their expectations for the upcoming week. They reported fewer physical complaints and reported spending significantly more time exercising. Yet the gratitude condition did not appear to influence global positive or negative affect. Study 1 was limited in that participants were asked to complete only one report per week. The effects on emotional well-being might be more pronounced with a more intensive intervention. To introduce a stronger manipulation, we designed a second study. This second study was similar in most respects to Study 1 except that (a) diaries were kept on a daily basis over a 2-week period, (b) we replaced the life events group with a downward social comparison focused group, and (c) we included a wider range of well-being outcomes than in Study 1.

Study 2

Method

Participants

The original sample consisted of 166 undergraduate participants (125 women, 41 men) enrolled in a health psychology class in a large, public university. They participated to fulfill the experiential learning component of the course. Nine of the subjects were eventually eliminated for failing to provide complete data, leaving a total of 157.

Table 1
Effects of Experimental Condition on 9-Week Mean Affects,
Study 1

Dependent variable	Gratitude	Hassles	Events	F(2, 193)
Gratitude composite	10.16 ^a	9.08 ^b	9.58 ^{ab}	4.69*
Positive affect factor	0.18	-0.13	-0.03	1.73
Negative affect factor	0.07	-0.14	0.07	1.16

Note. Means that do not share a letter are significantly different, $p < .05$.
* $p < .05$.

Table 2
Comparisons of Groups by Measures of Well-Being, Study 1

Dependent variable	Condition			F(2, 189)
	Grateful	Hassles	Events	
Life as whole	5.05 ^a	4.67 ^b	4.66 ^b	4.08*
Upcoming week	5.48 ^a	5.11 ^b	5.10 ^b	2.81*
Physical symptoms	3.03 ^a	3.54 ^b	3.75 ^b	3.06*
Hours of exercise	4.35 ^a	3.01 ^b	3.74 ^a	3.76**

Note. $N = 192$. Means that do not share a letter are significantly different, $p < .05$.

* $p < .05$. ** $p = .01$.

Procedure

Participants were provided with a packet of 16 "daily experience rating forms." The first 2 days were considered practice days and were not counted in the observation period. As in Study 1, we eliminated from analyses the first report from the observation period, resulting in a total of 13 daily reports that were used in the analyses to be reported. The affect rating portion of the daily mood and health report was nearly identical to the weekly report used in Study 1, except that the wording was changed to reflect the different time frame ("please rate the extent to which you felt the following reactions during the day today") and minor changes were made in some of the emotion terms on the form. Participants were instructed that their ratings should reflect their appraisal of the day as a whole. They were asked to complete the form in the evening before going to sleep and to turn in the form at the next class period. Compliance with the procedure was high; no participants had to be eliminated for noncompliance.

Conditions

Instructions for the gratitude and hassles conditions were identical to those used in Study 1. The third condition was a downward social comparison condition. Participants were told the following:

It is human nature to compare ourselves to others. We may be better off than others in some ways, and less fortunate than other people in other ways. Think about ways in which you are better off than others, things that you have that they don't, and write these down in the spaces below.

We included this condition to have a condition that appeared to be positive on the surface (to attempt to control for demand characteristics) but in reality might lead to different outcomes than the gratitude focus. Smith's (2000) review of the emotional effects of social comparison indicates that pride and *schadenfreude* (pleasure at the misfortune of others) are two common reactions to a downward social comparison. There were 52 participants in the gratitude condition, 49 in the hassles condition, and 56 in the downward social comparison condition.

Health Behaviors

The daily form asked participants to record the number of minutes they spent exercising strenuously, the number of minutes spent exercising moderately, the number of caffeine beverages consumed, the number of

² Rather than correlate the gratitude composite with each of the separate affects, we chose the two clearest markers of pleasant affect, happiness and joy.

alcoholic beverages consumed, and the number of aspirins or pain relievers taken. Because of the between-group exercise finding in Study 1, we attempted to decompose the exercise variable into more specific types of exercise. Strenuous exercise was defined as "hard exercise where you work up a sweat and your heart beats fast" (e.g., aerobics, running, swimming laps, dancing). Moderate exercise was defined as "exercise that is not exhausting" (e.g., biking, easy swimming, using an exercise machine, lifting weights). We also asked participants to record the number of hours of sleep they received the previous night and to rate the quality of that sleep on a scale from 1 (*very sound or restful*) to 5 (*very restless*).

Prosocial Behaviors

We asked participants to indicate, each day, if they had helped someone with a problem or offered someone emotional support. These were answered in a simple "yes" or "no" to each.

Results

Data Reduction

Within each daily survey, we aggregated scores on the three adjectives related to gratitude (*grateful*, *thankful*, and *appreciative*) to derive a single measure of mean daily gratitude. These three adjectives were highly correlated, with internal consistency reliability (Cronbach's alpha) estimates ranging from .84 to .90. These daily mean gratitude ratings from Days 2–14 were aggregated to form a single composite across the 13 days.

As in Study 1, we also calculated mean 13-day positive and negative affect scores by submitting the 27 other 13-day affect ratings to a maximum-likelihood factor analysis with oblimin rotation ($\Delta = 0$; see Footnote 1). As in Study 1, we specified that only two factors be extracted. These two factors accounted for 58% of the variance in the 27 13-day mean affect ratings. The first factor, which accounted for 37% of the variance, was clearly a measure of positive affect, with all positive affects loading greater than .50 on this factor and no loadings greater than .30 with any of the negative affects. The second factor, which accounted for 20% of the variance, was clearly a measure of negative affect, with all of the negative affects loading greater than .50 on this factor and no loadings greater than .30 with any of the positive affects. Despite our use of an oblique rotation method, the positive affect and negative affect factor scores were virtually orthogonal, $r(N = 157) = -.01, p > .05$.

Manipulation Check

We conducted a one-way ANOVA, with the 13-day mean gratitude rating as the dependent variable and the three experimental conditions (gratitude, hassles, social comparison) as the three levels of the independent variable to determine whether the three conditions elicited differential amounts of gratitude across the 13-day follow-up period. The means and standard deviations of the 13-day mean gratitude and the 13-day mean positive and negative affect factors appear in Table 3. The main effect for condition was significant, $F(2, 154) = 8.40, p < .001$. A post hoc Scheffé's test revealed that the gratitude condition elicited significantly more gratitude ($M = 9.78, SD = 1.80$) than did the hassles condition ($M = 8.03, SD = 2.18$), $p < .05$. Neither the gratitude nor the hassles conditions elicited significantly different amounts of grat-

Table 3
Effects of Experimental Condition on 13-Day Mean Affects, Study 2

Dependent variable	Gratitude	Hassles	Social comparison	$F(2, 157)$
Gratitude composite	9.78 ^a	8.03 ^b	8.93 ^{ab}	8.40*
Positive affect factor	0.24 ^a	-0.26 ^b	0.00 ^{ab}	3.28*
Negative affect factor	0.00	0.00	-0.06	<i>ns</i>

Note. Means that do not share a letter are significantly different, $p < .05$. * $p < .05$.

itude than did the social comparison condition ($M = 8.93, SD = 2.41$), $ps > .05$. Effect sizes (Cohen's d) were 0.88 for the mean difference between the gratitude and hassles conditions, 0.40 for the mean difference between the gratitude and social comparison conditions, and 0.39 for the mean difference between the social comparison and hassles conditions. Thus, relative to the social comparison condition, the gratitude and hassles conditions had nearly equal and opposite effects (i.e., $SD = .40$ and $-.39$, respectively) on daily levels of gratitude. It is interesting to note that the standard mean difference between the gratitude and hassles conditions was considerably larger in Study 2 ($d = .88$) than in Study 1 ($d = .56$), suggesting that the daily tasks completed in Study 2 were, on average, more potent in facilitating and inhibiting gratitude than they were when completed on a more infrequent, weekly basis.

The gratitude condition appeared to increase positive affect during the 13-day period. People in the gratitude condition ($M = 0.24, SD = 0.75$) reported significantly ($p < .05$) more positive affect (*attentive, determined, energetic, enthusiastic, excited, interested, joyful, strong*) than did participants in the hassles group ($M = -0.26, SD = 0.94$). The social comparison group ($M = 0.00, SD = 1.16$) was not significantly ($p > .05$) different from either the gratitude ($p = .46$) or hassles ($p = .39$) conditions. In contrast, there was little strong indication that the interventions had differential effects on negative affect during the 13-day period, $F(2, 154) = 0.25, p = .78$.

Gratitude as a Mediator of the Interventions' Effects on Positive Affect

Our theorizing has led us to suggest that gratitude, per se, may help to boost positive affect more generally, which is consistent with the facts that (a) the gratitude intervention elicited more gratitude and more positive affect than did the hassles condition, and (b) gratitude and positive affect were correlated, $r(N = 157) = .80, p < .001$. However, these bivariate associations do not shed light on the stronger hypothesis that the gratitude intervention's effects on gratitude were responsible for the effects of the intervention on positive affect more generally. Moreover, the bivariate associations do not test the possibility that the effects of the intervention on gratitude were the by-product of the more general effects of the interventions on positive affect. To examine these latter hypotheses explicitly requires mediational analyses (e.g., Baron & Kenny, 1986).

According to Baron and Kenny (1986, p. 1177), mediation may be present when the following three conditions are met: (a) an intervention has a significant effect on a presumed mediator (i.e., gratitude); (b) the intervention has a significant effect on the criterion variable (i.e., positive affect); and (c) the presumed mediator (gratitude) and the criterion (positive affect) are significantly related when the effect of the intervention is controlled. When the effect of the intervention on the criterion disappears completely when the presumed mediator is controlled, one may reasonably conclude that the presumed mediator completely mediates the effect of the intervention on the criterion.

Because the gratitude intervention appeared to create more grateful emotion and more positive affect than did the hassles condition (but not the downward social comparison condition), we limited our mediational analyses only to participants who were involved in the gratitude and hassles conditions. We converted the difference in the effects of these two interventions on gratitude and positive affect to correlation coefficients to enhance the interpretability of our mediational analysis.

The correlation of the intervention effect (i.e., gratitude vs. hassles) with gratitude was $r(N = 101) = -.41, p < .001$, with the negative sign indicating that the mean gratitude score was lower in the hassles condition. The correlation of the intervention effect on positive affect was $r(N = 101) = -.28, p < .01$. When positive affect was regressed on the intervention effect and gratitude simultaneously, gratitude had a significant unique association with positive affect ($\beta = .85, p < .001$), but the intervention did not ($\beta = .06, p = .31$). Conversely, when gratitude was regressed on the intervention effect and positive affect simultaneously, positive affect had a significant unique association with gratitude ($\beta = .77, p < .001$), but the intervention effect did as well ($\beta = -.19, p = .001$).

The indirect (mediated) effect of the intervention on positive affect can be computed as the product of the correlation coefficient indexing the intervention-gratitude relationship ($r = -.41$) and the regression coefficient indexing the so-called effect of gratitude on positive affect, controlling for the intervention effect ($\beta = .85$). The product of these two coefficients is $-.35$. The proportion of the total intervention-positive affect association (i.e., $r = -.28$) that is accounted for by the mediating effects of gratitude can therefore be computed as the indirect effect divided by the total effect (i.e., $-.35/-.28$). Multiplying this quotient by 100% yields a value exceeding 100%, so we can conceptualize gratitude as a complete mediator of the intervention's effect on positive affect.

Conversely, if we assume that the effects of the intervention on gratitude were mediated by positive affect, we would calculate the indirect effect of the intervention on gratitude as $[(-.28)(.77)] = -.22$. The proportion of the total effect of the intervention on gratitude ($r = -.41$) that can be attributed to the indirect effects of the intervention on positive affect, therefore, is $-.22/-.41 = 54\%$. Thus, it appears that it is reasonable to conclude that gratitude completely mediates the effects of the gratitude (vs. hassles) intervention on positive affect, but it does not appear that the effects of the gratitude intervention on grateful emotion can be conceptualized strictly as the by-product of the intervention's more general effects on positive affect.

Health Outcomes

In contrast to Study 1, there were no differences in reported physical health complaints nor in time spent exercising, either vigorously or moderately, between the three groups. There were also no differences on the additional health behaviors that were measured (sleep amount and quality, aspirin, caffeine, alcohol usage).³

Prosocial Behaviors

There was an indication that the interventions had differential effects on the two items that measured prosocial behavior. People in the gratitude condition were more likely to report having offered emotional support to others, $F(2, 154) = 2.98, p < .05$, than those in either the hassles group or the social comparison group. They were also marginally more likely to have helped someone with a problem, $F(2, 154) = 1.72, p = .08$, compared with people in the hassles condition. They did not differ from the social comparison condition in frequency of helping others.

Discussion

Using a more intensive procedure for cultivating gratitude in this second study enabled us to observe a number of beneficial emotional effects of focusing on what one is grateful for. People in the gratitude condition experienced higher levels of positive affect during the 13-day period, and it appears plausible that this effect on positive affect generally was due to the intervention's effect on gratitude per se. They were also more likely to report having helped someone with a personal problem or offered emotional support to another, suggesting prosocial motivation as a consequence of the gratitude induction. Data were consistent with the hypothesis that gratitude mediated the effects of the intervention on positive affect. Unlike Study 1, however, the benefits did not extend to the somatic realm: No differences were observed in physical symptomatology or health behaviors. We suspect that this may have been due to the relatively short time frame of the study. People are unlikely to alter their exercise habits in a 2-week period.

Because of the failure to replicate some of the effects from Study 1 to Study 2, we conducted a third study. Study 3 had the following three main purposes: (a) to extend the experimental period from 2 weeks to 3 weeks to see if the benefits of a grateful outlook could be observed over a longer period of time; (b) to broaden our participant base beyond healthy college students by recruiting an adult sample with chronic disease; and (c) to examine whether the affective benefits observed in Study 2 could be replicated in another daily study and, importantly, if these effects are observable within the context of the person's closest relationship. We thus expand our range of dependent variables to include spouse-rated affect and satisfaction with life.

³ Descriptive statistics on these health variables are available from Robert A. Emmons.

Study 3

Method

Participants

The original sample consisted of 65 people (44 women, 21 men) with either congenital or adult-onset NMDs. Participants were recruited through a mailing list compiled by the University of California, Davis, Medical Center Neuromuscular Disease Clinic. They ranged in age from 22 to 77 years, with a mean age of 49 years. The majority had one of three NMDs: Post-polio, Charcot-Marie-Tooth, or Fascioscapulohumeral (see <http://www.rehabinfo.net> for more information about NMD). Sixty-eight percent of the participants were married, 42% had college or postgraduate degrees, and their mean income was between \$15,000 and \$25,000. Little is known about factors affecting the quality of life in persons with NMDs (Abresch, Seyden, & Wineinger, 1998), and thus the availability of this sample provided us with a unique opportunity to determine if the gratitude intervention could be effective in improving well-being in this population.

Procedure

Participants were provided with a packet of 21 "daily experience rating forms" that were very similar to those used in Study 2. They were also provided with a set of instructions and business reply envelopes for mailing their forms directly back to the researchers. They were instructed to fill out the form as close to the end of the day as possible, and were told that their ratings are meant to summarize the day as a whole. We encouraged them to try and complete it as late in the day as possible, but before being too sleepy to complete it accurately. It was stressed that for most of them, the optimal time will be in the early evening. The daily form took approximately 5 min to complete each evening. Participants were asked to mail in their forms once a week. Finally, they were told that should they forget to fill out a form, that it is better to omit the form for that day rather than filling it out from memory. Participants were paid \$20 if they completed all of the forms; \$15 if they failed to complete all 21 forms. Virtually everyone completed all 21 forms.

Conditions

Participants were assigned to one of two conditions: the gratitude condition used in Studies 1 and 2 or a control condition in which participants completed the affect, well-being, and global appraisals *only* each day. There were a total of 33 participants in the gratitude condition and 32 in the control condition. Examples of gratitude inducing experiences were as follows: "grateful to my boss for understanding my needs," "to my gardener," and "to my paperboy for being so reliable."

Daily Experience Form

Daily affect. Each day, participants indicated the extent to which they had experienced each of 32 discrete affects (including *grateful*, *thankful*, and *appreciative*, as well as the specific affects used in Studies 1 and 2) on a 5-point Likert-type scale (ranging from 1 = *very slightly or not at all* to 5 = *extremely*).

Subjective well-being. Participants completed the same two global life appraisals (regarding life as a whole and optimism about the upcoming week) that we used in Study 2. In addition, participants indicated how connected they felt with others (where -3 = *isolated* and +3 = *well-connected*). We included this item because an important issue for the quality of life in people with NMD is a sense of integration into their community (Abresch et al., 1998).

Health behaviors. The daily form asked participants to record the number of hours of sleep they received the night before, whether they had

any difficulties falling asleep the night before (*yes/no*), and how refreshed they woke up from sleep that morning (ranging from 1 = *not at all* to 5 = *extremely*). Participants also indicated how much physical pain they experienced each day (ranging from 1 = *none* and 6 = *very severe*) and how pain interfered with what they wanted to accomplish each day (ranging from 1 = *none* and 5 = *extremely*). Finally, participants indicated whether they had exercised that day (*yes/no*). We included items on sleep duration and sleep quality because sleep predicts quality of life in older populations (Hoch et al., 2001).

Activities of daily living. Participants indicated (*yes/no*) whether they had difficulties with any of six activities of daily living: (a) walking across a small room, (b) bathing or dressing; (c) eating; (d) lifting or carrying objects; (e) climbing stairs; (f) using the toilet. These items were averaged to create an overall measure of functional status. This six-item composite had an internal consistency reliability of $\alpha = .79$.

Observer reports of well-being. To augment the self-reports of the well-being variables, we administered the Positive and Negative Affect Scales and the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) to the participant's spouse or significant other. We asked them to fill out the questionnaires according to how they think their spouse or significant other would respond. They were sent these questionnaires immediately following the 21-day period, and were asked to complete the measure in confidentiality. These questionnaires were mailed directly back to us, and we paid spouses or significant others \$10 for completing the measure. A total of 26 observer reports were obtained from each group.

Results

Data Reduction

Within each daily survey, we aggregated scores on the three adjectives related to gratitude (*grateful*, *thankful*, and *appreciative*) to derive a single measure of mean daily gratitude. These three adjectives were highly correlated, with a mean internal consistency reliability of $\alpha = .91$. These daily mean gratitude ratings from Days 1–21 were aggregated to form a single composite across the 21 days. Other daily measures were aggregated into mean scores over the 21-day period.

Manipulation Check

We conducted a one-way ANOVA, with the 21-day mean gratitude rating as the dependent variable and the two experimental conditions (gratitude, control) as the two levels of the independent variable to determine whether the conditions elicited differential amounts of gratitude across the 21-day follow-up period. The main effect for condition was significant, $F(1, 63) = 9.80, p < .01$. As seen in Table 4, the gratitude condition elicited more gratitude

Table 4
Means, Standard Deviations, and Effects of Experimental Condition on 21-Day Mean Affects, Study 3

Dependent variable	Gratitude	Control	$F(1, 63)$
Gratitude composite	10.87	8.91	9.80**
Positive affect factor score	0.35	-0.25	5.18*
Negative affect factor score	-0.26	0.26	4.37*

Note. $N = 65$.

* $p < .05$. ** $p < .01$.

($M = 10.87$, $SD = 2.47$) than did the control condition ($M = 8.91$, $SD = 2.55$), $d = .78$.

Group Differences on Positive and Negative Affect

As in Studies 1 and 2, we calculated mean 21-day positive and negative affect scores by submitting the 29 other 21-day discrete affect ratings to a maximum-likelihood factor analysis with oblimin rotation ($\Delta = 0$). For this factor analysis, to increase our cases-to-variables ratio, we also included data from 32 participants who completed an experimental condition that was not included in the present study. As in Studies 1 and 2, we also specified that only two factors be extracted. These two factors accounted for 66% of the variance in the 29 21-day mean affect ratings. The first factor, which accounted for 40% of the variance, was clearly a measure of negative affect, with loadings greater than .80 for typical negative affects such as *bitter*, *sad*, and *afraid*, and no loadings greater than .40 with any of the positive affects. The second factor, which accounted for 26% of the variance, was clearly a measure of positive affect, with typical positive affects such as *happy*, *excited*, and *inspired* loading greater than .80 on this factor and no loadings greater than .30 with any of the negative affects. The positive affect and negative affect factor scores were only modestly correlated, $r(N = 96) = -.18$, $p > .05$.

As can be seen in Table 4, the gratitude intervention produced higher scores on the positive affect factor ($M = 0.35$, $SD = 1.13$) than did the control condition ($M = -0.25$, $SD = 0.98$), $F(1, 63) = 5.18$, $p = .026$, $d = .56$. Also, the gratitude condition produced lower scores on the negative affect factor ($M = -0.26$, $SD = 0.73$) than did the control condition ($M = 0.26$, $SD = 1.23$), $F(1, 63) = 4.37$, $p = .041$, $d = -.51$. Thus, it appeared that the gratitude condition not only fostered daily positive affect, but also, reduced daily negative affect, during the 21-day study period.

Gratitude as a Mediator of the Interventions' Effects on Positive Affect

Mean daily gratitude was correlated with mean daily positive affect, $r(N = 65) = .77$, $p < .001$, but not with mean daily negative affect, $r(N = 65) = .10$, $p = .43$. Because, as in Study 2, the gratitude intervention appeared to increase mean daily gratitude as well as mean daily positive affect, and because these two measures themselves were significantly correlated, we examined whether the effect of the gratitude intervention on daily positive affect was mediated by the effect of the gratitude intervention on gratitude. We also explored the possibility that the effect of the gratitude intervention on daily gratitude could be conceptualized as simply the by-product of its general effect on mean daily positive affect. As in Study 2, we converted the difference in the effects of these two interventions on gratitude and positive affect to correlation coefficients to enhance the interpretability of our mediational analysis.

The correlation of the intervention effect (i.e., gratitude vs. control) with gratitude was $r(N = 65) = -.37$, $p = .003$, with the negative sign indicating that the mean gratitude score for participants in the control condition was lower than that for those in the gratitude condition. Similarly, the correlation of the intervention effect on positive affect was $r(N = 65) = -.28$, $p = .026$. When

positive affect was regressed on the intervention effect and gratitude simultaneously, gratitude had a significant unique association with positive affect ($\beta = .78$, $p < .001$) but the intervention did not ($\beta = .01$, $p = .92$). Conversely, when gratitude was regressed on the intervention effect and positive affect simultaneously, positive affect had a significant unique association with gratitude ($\beta = .73$, $p < .001$), but the intervention effect also had a small, statistically significant effect on gratitude ($\beta = -.17$, $p = .044$).

The indirect (mediated) effect of the intervention on positive affect is equal to the product of the correlation coefficient indexing the intervention-gratitude relationship ($r = -.37$) and the regression coefficient indexing the so-called effect of gratitude on positive affect ($\beta = .78$). The product of these two coefficients equals $-.29$. The proportion of the total intervention-positive affect association (i.e., $r = -.28$) that is accounted for by the mediating effects of gratitude can therefore be computed as the quotient of the indirect effect to the total effect. Multiplying this quotient ($-.29/-.28$) by 100% yields a value exceeding 100%, so, on the basis of the available evidence, we can conceptualize gratitude as a complete mediator of the intervention's effect on positive affect.

Conversely, if we assume that the effects of the intervention on gratitude were mediated by positive affect, we would calculate the indirect effect of the intervention on gratitude as $[(-.28)(.73)] = -.20$. The proportion of the total effect of the intervention on gratitude ($r = -.37$) that can be attributed to the indirect effects of the intervention on positive affect therefore is $-.20/-.37 = 55\%$. Thus, as we found in Study 2, it appears reasonable to conclude that gratitude completely mediates the effects of the gratitude intervention on positive affect, but it does not appear that the effects of the gratitude intervention on grateful emotion were strictly the by-product of the intervention's more general effects on positive affect.

Effects on Subjective Well-Being

Subjective appraisals. As in Study 1, participants in the gratitude condition reported considerably more satisfaction with their lives as a whole, felt more optimism about the upcoming week, and felt more connected with others than did participants in the control condition (see Table 5). Therefore, it appears that participation in the gratitude condition led to substantial and consistent improvements in people's assessments of the global well-being.

Effects on Health Measures

As can be seen in Table 6, participants in the gratitude condition reported getting more hours of sleep each night than did partici-

Table 5
Comparisons of Groups by Measures of Subjective Well-Being, Study 3

Dependent variable	Gratitude	Control	F(1, 63)
Life as whole	5.54	4.80	13.77**
Upcoming week	5.70	5.20	5.38*
Connected with others	5.77	5.07	11.67**

Note. $N = 65$.

* $p < .05$. ** $p < .01$.

Table 6
Comparisons of Groups on Measures of Physical Well-Being, Study 3

Dependent variable	Gratitude	Control	<i>F</i> (1, 63)
Hours of sleep	7.58	7.06	5.60*
How refreshed on waking	3.04	2.58	3.09*
Physical pain	2.96	3.20	0.91
Pain interference	2.30	2.35	0.05
Exercise (yes/no)	1.60	1.72	1.78
Functional status	1.63	1.58	0.49

Note. *N* = 65.

* *p* < .05.

pants in the control condition. However, in contrast to Study 1, there were no other differences in reported physical health symptoms or on the six-item measure of functional status.

Observer Reports of Well-Being

For the 26 participants in the gratitude condition and in the control condition, we computed the mean positive affect, negative affect, and life satisfaction on the basis of the reports submitted by their spouse or significant other. The participants in the gratitude condition were rated as higher in positive affect (3.68 vs. 3.31, *p* = .06) and life satisfaction (4.42 vs. 3.63, *p* < .02) than participants in the control condition; no difference was observed for negative affect. These data indicate that the benefits of the gratitude listing, in comparison with a control group, transcend self-perceptions and are evident at least to significant others.

Discussion

As in Study 1, the gratitude manipulation affected subjective life appraisals. As in Study 2, the gratitude manipulation appeared to create increases in positive affect, as well as reductions in negative affect. Once again, mediational analyses showed that gratitude was uniquely responsible for the effect of the intervention on positive affect. In addition, the gratitude intervention also appears to have improved people's amount of sleep and the quality of that sleep. Furthermore, the effects on well-being (positive affect and life satisfaction) were apparent to the participants' spouse or significant other. However, similar to Study 2, there were no measurable effects of the manipulation on other measures of physical health or health behaviors.

General Discussion

A prevailing sentiment in both classical and popular writings on happiness is that an effective approach for maximizing one's contentment is to be consciously grateful for one's blessings. It would seem that, on the basis of the results of these three experimental studies, there is some truth to this wisdom. Our results provide some important findings that have not been reported in the empirical literature on happiness. There do appear to exist benefits to regularly focusing on one's blessings. The advantages are most pronounced when compared with a focus on hassles or complaints, yet are still apparent in comparison with simply reflecting the

major events in one's life, on ways in which one believes one is better off than comparison with others, or with a control group. In Study 1, we found that a weekly benefit listing was associated with more positive and optimistic appraisals of one's life, more time spent exercising, and fewer reported physical symptoms. In Study 2, self-guided daily gratitude exercises were associated with higher levels of positive affect. People led to focus on their blessings were also more likely to report having helped someone with a personal problem or offered emotional support to another, suggesting prosocial motivation as a consequence of the gratitude induction. This finding lends support to the hypothesis that gratitude serves as a moral motivator (McCullough, Kilpatrick, Emmons, & Larson, 2001). The daily manipulation in Studies 2 and 3, were, on average, more powerful in facilitating gratitude than was the weekly listing used in Study 1. Consequently, the attendant effect sizes for the manipulation were larger in Study 2. Study 3 examined the effects of the gratitude manipulation in a sample of adults with NMD. We found that random assignment to the gratitude condition resulted in greater levels of positive affect, more sleep, better sleep quality, and greater optimism and a sense of connectedness to others. In Study 3, we even found that the gratitude intervention led to reductions in negative affect, a finding that is consistent with correlational research reporting that trait gratitude is associated with less negative affect (McCullough et al., 2002). Of most importance, our mediational analyses in Studies 2 and 3 revealed that the effects of the intervention on gratitude were specifically the results of the gratitude induction and were not the by-product of the more general effect of the intervention on positive affect.

Strengths and Limitations

Because of the dearth of experimental research on strategies for cultivating positive affect in daily life, the research reported in these studies offer important contributions not previously demonstrated. We believe that we have established a rather easily implemented strategy for improving one's level of well-being. We do not know how long these effects last and whether they can be sustained over time. There does seem to be evidence that some of the effects on well-being are apparent to others, as the observer ratings in Study 3 indicate. Future studies will need to be designed to examine long-term consequences of counting blessings.

One of the unique features of this research is that we randomly assigned participants to conditions. The literature on personality and subjective well-being is almost entirely correlational in nature. It should be kept in mind that the manipulation used in these three studies represents, in our view, a rather minimal intervention. We asked participants to reflect, either once a week or once a day for 2 to 3 weeks, on what they have to be grateful for and we expected this limited request to impact on well-being. Seen in that light, the results we obtained were rather noteworthy. After all, there are a myriad of influences on well-being, from personality factors to genetic influences to chronic and temporary life events, and thus any one factor by itself would not be expected to be particularly potent. We are under no illusion that we were able to inculcate a deep sense of gratefulness as a fundamental life orientation or to instill the virtue of gratitude as a result of this brief manipulation. Nevertheless, we believe that given the previous theoretical argu-

ments and the limited empirical work concerning gratitude, that an intentional grateful focus is one form of cognitive appraisal of one's life circumstances with the ability to impact long-term levels of well-being.

In each study, inducing a state of gratefulness through the self-guided gratitude exercises led to some emotional, physical, or interpersonal benefits. Unfortunately, not all findings replicated across the three studies. With respect to the failure to replicate the exercise finding, we suspect that 2–3 weeks is simply too short a period of monitoring to observe an effect. People are unlikely to alter habitual exercise patterns within such a short period of time. We are confident that this was a real effect in Study 1, and did not simply reflect self-perceptions. Studies have found that self-reports of exercise correlate reliably with physical fitness levels and to physiological indices such as resting heart rate (Brown, 1991). Similarly, health complaints, reflecting as they do stable predispositions (Wangby, 2000) would also be unlikely to shift significantly within a short time span. Other methodological factors may be operating as well. Inspection of mean levels of symptom reporting in the first two studies revealed extremely low levels of symptomatology in Study 2 (roughly half of the mean levels reported in Study 1). This restriction of range could have attenuated the effects of the experimental manipulation in the daily study. Aggregating symptoms reports over longer time frames (as in Study 1) may reveal more reliable effects.

Relative Magnitude of the Effect Sizes

We hypothesized that reflecting on ways in which one perceives oneself as being better off than others would have less of a beneficial effect on well-being than would consciously counting one's blessings. Somewhat contrary to our expectations, we did not find that the downward social comparison group experienced statistically significantly lower levels of positive affect as compared with the gratitude-outlook group. Similarly, the social comparison group reported only marginally lower levels of grateful emotions (*grateful*, *thankful*, and *appreciative*) than did participants in the gratitude condition. However, all of the mean differences were in the predicted direction, with the downward social comparison condition falling between the gratitude and hassles conditions on almost all of the positive moods rated. Studies have documented that downward social comparison is an effective coping strategy (Stanton, Danoff-Burg, & Cameron, 1999) and it has even been suggested as a possible route to gratitude, which under certain circumstances and for certain people, might increase their levels of thankfulness (Miller, 1995). Reflecting on the positive aspects of one's life, a process common to both the downward social comparison and gratitude conditions, has benefits when compared with a focus on hassles and complaints. Given that gratitude is a positive affective state that covaries with other positive emotions (Mayer et al., 1991), it would be surprising if a manipulation that elevated positive affect would leave grateful emotions untouched. Yet, gratitude appears to be the more potent elicitor of pleasant affect. Because of its potential for eliciting pride and/or envy (Smith, 2000), we cannot recommend downward social comparison as a general strategy for inducing feelings of gratitude when more direct routes are available. Downward social comparisons have also been shown to have negative implications

for the self and to lead to negative affect (Buunk, Collins, Taylor, & VanYperen, 1990). The contribution of comparison-based judgmental processes for eliciting gratitude (e.g., counterfactual thinking; Teigen, 1997) is an intriguing research question that is in need of further study.

When considering the mean effect sizes, the difference between the gratitude and hassles conditions became more pronounced in Study 2, the first daily study. This indicates that, relative to a focus on complaints, an effective strategy for producing reliably higher levels of pleasant affect is for people to write, on a daily basis, about those aspects of their lives for which they are grateful. Moreover, the participants in the gratitude condition were more likely to have offered others emotional support, suggesting that not all benefits were solely intrapsychic.

Alternative Explanations

Is it possible to simply attribute the effects of the intervention to demand characteristics? If the results were due to demand characteristics, then ratings on the outcome variables should have been affected uniformly. However, the observed pattern was far less predictable. Those in the gratitude condition did not always show advantages over the other conditions, and what advantages they did exhibit were rather selective. There were clearly limits to the effect. In Study 3, for example, people in the gratitude condition did not feel less pain or have fewer difficulties in activities of daily living. Attempts were also made by us to conceal the hypothesis in the studies. Participants were unaware that they were participating in a random design experiment, and would have not been privy to the various experimental conditions. They were not informed that it was a research study on gratitude and well-being. The addition of the social comparison condition in Study 2, where the demands appear similar yet the effect of the gratitude manipulation was even stronger, also argues against a simple demand alternative. It might be also wondered whether the same pattern would have been observed if we had simply asked people to dwell on the positives in their lives or had them otherwise engage in happy thinking. Research literature and conceptual analyses of gratitude suggest that gratitude is an experiential state that overlaps with yet is distinct from simply "positive thinking." We did not find that the grateful group felt less angry, depressed, sad, or other unpleasant states as a global positivity hypothesis might suggest. Furthermore, in the sense that gratitude is a moral affect that motivates prosocial behavior, one would anticipate different consequences or action tendencies for gratitude as opposed to happiness. Indeed, we did find in Study 2 that people in the gratitude condition were significantly more likely to have helped another with a personal problem compared with those in the contrasting conditions.

Gratitude and Well-Being: An Upward Spiral?

Insofar that it is not possible to account for our results in terms of methodological factors, what mechanisms, psychological or otherwise, might explain why participants in the gratitude condition generally evidenced higher levels of well-being than those in the comparison conditions? We believe that Fredrickson's (1998, 2000) broaden and build model of positive emotions may be especially helpful here. She has argued that positive emotions

broaden mindsets and build enduring personal resources (Fredrickson, 1998). These resources function as reserves to be drawn on in times of need. Seen in the light of this model, gratitude is effective in increasing well-being as it builds psychological, social, and spiritual resources. Gratitude inspires prosocial reciprocity (McCullough et al., 2002), and indeed, is one of the primary psychological mechanisms thought to underlie reciprocal altruism (Trivers, 1971). The experience of gratitude, and the actions stimulated by it, build and strengthen social bonds and friendships. Moreover, encouraging people to focus on the benefits they have received from others leads them to feel loved and cared for by others (Reynolds, 1983). Therefore, gratitude appears to build friendships and other social bonds. These are social resources because, in times of need, these social bonds are wellsprings to be tapped for the provision of social support. Gratitude, thus, is a form of love, a consequence of an already formed attachment as well as a precipitating condition for the formation of new affectional bonds (Roberts, in press). Gratitude is also likely to build and strengthen a sense of spirituality, given the strong historical association between gratitude and religion (Emmons & Crumpler, 2000; McCullough et al., 2002). Finally, to the extent that gratitude, like other positive emotions, broadens the scope of cognition and enables flexible and creative thinking, it also facilitates coping with stress and adversity (Aspinwall, 1998; Folkman & Moskowitz, 2000). According to the broaden-and-build model, gratitude not only makes people feel good in the present, but it also increases the likelihood that people will function optimally and feel good in the future. Watkins (in press) describes several other potential mechanisms that might account for the link between grateful cognitions and subjective well-being.

Directions for Future Research

Although we have made some progress in understanding how gratitude as a conscious cognitive strategy might affect psychological well-being, many important questions remain to be asked. For example, we have treated gratitude as a malleable characteristic in our research, yet it may also possess trait-like qualities (McCullough et al., 2002). To what degree would dispositional gratefulness, or other individual differences, interact with a gratitude manipulation to either strengthen or weaken the effect? Can gratitude be cultivated equally well in men and women? It has been argued that conventional, self-reliant men may be averse to experiences and expressions of gratefulness to the extent that they signify dependency and indebtedness (Solomon, 1995). Those designing gratitude interventions may have to be sensitive to different meanings that men and women might associate with gratitude.

We do not know the extent to which gratitude interventions might be effective in people with affective disorders, such as (sub)clinical depression. If a daily gratitude focus can augment positive affect, as Studies 2 and 3 suggest, then perhaps such intervention may be effective in alleviating milder forms of depressed affect. Can thankfulness be incorporated into cognitive-behavioral interventions modeled after those that are effective in instilling a sense of optimism (Buchanan, Gardenswartz, & Seligman, 1999)? If so, might these also be effective in the prevention or alleviation of debilitating negative affect, anger, and resentment

(Roberts, in press), or even eating disorders (Morishita, 2000)? Naikan therapy, a demanding form of self-reflective therapy originating in Japan, is a technique in which clients are induced to experience a strong sense of gratitude to those who have provided them with benefits (Hedstrom, 1994; Reynolds, 1983). It has been associated with some positive outcomes, including increased favorable evaluations of others (Hedstrom, 1994). Beyond our rudimentary efforts to cultivate gratitude in these studies, what are the most effective, long-term ways of kindling grateful thoughts and actions? What chronic thoughts and attitudes thwart grateful thinking? These questions and others constitute an agenda for the growing science of gratitude research.

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