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The Hedonistic Paradox: Is Homo Economicus Happier?

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Abstract

The “Hedonistic Paradox” states that *homo economicus*, or someone who seeks happiness for him- or herself, will not find it, but the person who helps others will. This study examines two questions in connection with happiness and generosity. First, do more generous people, as identified in dictator experiments, report on average greater happiness, or *subjective well-being* (SWB), as measured by responses to various questionnaires? Second, if the answer is affirmative, what is the causal relationship between generosity and happiness? We find a favorable correlation between generosity and happiness (i.e., SWB is directly related to several measures of happiness and inversely related to unhappiness) and examine various possible explanations, including that material well-being causes both happiness and generosity. The evidence from this experiment, however, indicates that a tertiary personality variable, sometimes called psychological well-being, is the primary cause of both happiness and greater generosity. In contrast to field studies, the experimental method of this inquiry permits anonymity measures designed to minimize subject misrepresentation of intrinsic generosity (e.g., due to social approval motives) and of actual happiness (e.g., because of social desirability biases) and produces a rich data set with multiple measures of subjective, psychological and material well-being. The results of this and other studies raise the question of whether greater attention should be paid to the potential benefits (beyond solely the material ones) of policies that promote charitable donations, volunteerism, service education, and, more generally, community involvement, political action, and social institutions that foster psychological well-being.

JEL classification: C91; D64

Keywords: Happiness; Subjective well-being; Altruism; Generosity; Psychological well-being; Eudaimonia

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1. Introduction

Concern for our own happiness recommends to us the virtue of prudence: concern for that of other people – Adam Smith [*The Theory of Moral Sentiments*, 1759 (1809), pg. 357].

A centerpiece of economics is the claim, set forth in Adam Smith’s *The Wealth of Nations* and later demonstrated in the First Theorem of Welfare Economics, that, under certain conditions, the actions of the rational and self-interested *homo economicus* promote the general good, usually

understood as the efficient allocation of material wealth. Yet many studies by social scientists cast doubt on the importance of income and wealth to the happiness of most societies. In philosophy there exists a very different conjecture about self-interest and happiness that resonates more with Adam Smith's other major work, *The Theory of Moral Sentiments*. The "Hedonistic Paradox" (or, rather, one version of it) states that the person who seeks pleasure, or happiness, for him- or herself will not find it, but the person who helps others will (or has a greater chance of finding it). Of course, the Hedonistic Paradox and the First Welfare Theorem do not necessarily conflict (Adam Smith apparently reconciled himself to both), but they do suggest very different approaches to the motivation and impact of individual behavior.

A substantial literature now exists on how *getting* money affects happiness. This paper poses, in a sense, the opposite question: how does *giving* money affect happiness? We report the results of an experiment that examines two questions in this connection. First, do more altruistic (i.e., intrinsically generous) people report on average greater happiness (or *subjective well-being* in the terminology of psychology)? Second, if the answer is affirmative, what kind of causal relationship might underlie this? As a concrete and simple measure of generosity, we use a "dictator experiment" in which one subject (the dictator) decides how much, if any, of a fixed sum of money to share with an anonymous counterpart (the recipient). This decision is then related to various measures of subjective, psychological and material well-being that are derived from subject responses to questionnaires.

The dictator experiment is non-strategic, and our version involves double-blind conditions, i.e., decisions and responses cannot be traced to specific participants either by fellow participants or by the investigator. Compared to field studies, these design features provide numerous advantages for quantifying correlations and addressing causality. First, dictator giving is a simple and transparent measure of generosity that is easily understood by subjects and interpreted by researchers. Second, the non-strategic structure offers no material reasons for giving that might be present, for example, in reciprocal relationships like the "trust" game of Berg, Dickhaut and McCabe (1995), where generosity can increase the giver's payoff. Third, it has been shown (e.g.,

Buchanan, Eckel and Grossman, 2000) that dictator generosity can be influenced by social approval motives, i.e., people share with others partly to garner their approval, but double-blind conditions here provide no basis for this. Fourth, these anonymity measures help tackle a related issue. Specifically, psychological measures have also proven to be vulnerable to social approval motives (see Diener et al., 1999), and responses are less candid when they are not anonymous, e.g., respondents often profess to be happier than they actually are in order to present themselves in a socially desirable way. Finally, the experimental design also allows the inclusion of numerous instruments not available in other data sets, including one to identify any residual social approval motives and some new measures of happiness. Redundant measures of most variables permit examination of the robustness of any effects involving those variables.

We find a favorable correlation between generosity and several measures of happiness, specifically, dictators who share with recipients appear to have more favorable long-run, but not short-run, feelings, including higher overall happiness, higher positive feelings, lower negative feelings and higher peak happiness. We examine various possible explanations, including that generosity causes happiness, that happiness causes generosity, and that material well-being causes both happiness and generosity. The experimental evidence, however, most strongly supports a different hypothesis, namely, that psychological well-being (i.e., healthy psychological functioning) is the primary cause of both happiness and dictator generosity.

The results of this study and others in economics and psychology suggest the importance for happiness of economic resources, not only as outcomes, but also as means to accommodate activities that promote happiness. For example, Thoits and Hewitt (2001) find that volunteer work improves happiness, life satisfaction, self-esteem and even physical health. Frey and Stutzer (2002a) conclude that democratic rights and economic freedom are positively related to happiness. More generally, Frey, Benz and Stutzer (2004) introduce the concept of “procedural utility” and illuminate the many ways subjective well-being often depends more on processes than outcomes. These results suggest that greater attention should be paid to the benefits (beyond solely the material ones) of policies that promote charity, volunteerism, service education,

community and political involvement, and institutions that foster psychological well-being.

This paper is organized as follows. Section 2 addresses theory, method and evidence on economics and well-being. Section 3 details the experiment and presents four hypotheses about the relationship between generosity and happiness. Section 4 presents and discusses the results and data analysis, and section 5 concludes.

2. Economics and Well-Being

2.1. Methodological Background

The current study addresses a wide range of theories and utilizes numerous empirical instruments. A number of questions arise about the meaning, validity and interpretation of the various instruments that have been used to measure well-being (for a more detailed discussion, see Di Tella and MacCulloch, 2006). There is a significant amount of evidence from objective data, however, that the self-report measures that most studies, including this one, employ correlate in plausible ways with other observable variables, which bolsters one's confidence that questions of interpersonal comparability, cardinalism and the meaning of happiness, although theoretically problematic, are not insurmountable in practical terms.¹

One potential source of error in self-report measures of happiness, however, is the response artifact of *social desirability*. This is the tendency for respondents sometimes to distort self-reports in a favorable, or socially desirable, direction (Furnham, 1986), e.g., if survey respondents

¹ For example, different self-report scales of SWB have demonstrated significant and generally high correlations with one another (Fordyce, 1988) as well as with certain objective circumstances in the individual's life (Brickman, et al., 1978), economic conditions of unemployment and inflation (Di Tella, MacCulloch and Oswald, 2001), opportunities for political participation (Frey and Stutzer, 2000a, b), subject recall of positive versus negative life events (Seidlitz, Wyer and Diener, 1997), reports of friends and family members (Sandvik, Diener and Seidlitz, 1993), reports of spouses (Costa and McCrae 1988), reports from clinical experts (Goldings, 1954), the duration of so-called Duchenne smiles (Ekman, Davidson and Friesen, 1990), heart rate and blood pressure measures of responses to stress (Shedler, Mayman and Manis, 1993), skin resistance measures of responses to stress (Weinberger, Schwartz and Davidson, 1979), and electroencephalogram measures of prefrontal brain activity (Sutton and Davidson, 1997). There is actually evidence that self-reported SWB is more reliable than alternative measures. Irwin, Kammann and Dixon (1979), for instance, found that respondents' ratings of their roommates' happiness more strongly correlated with their own happiness than with their roommates' self-ratings, concluding that peer ratings reflect mainly a projection of one's own happiness onto others. In addition, Fernández-Dols and Ruiz-Belda (1995) found that smiling is an unreliable expression of happiness except during social interaction.

overstate their true happiness.² A commonly used measure of this is the Marlowe-Crowne (MC) Social Desirability scale (Crowne and Marlowe, 1964), a 33 item questionnaire for which higher scores indicate more socially desirable responses. Various SWB scales have correlated significantly with the MC and other social desirability scales (Diener, et al., 1991), suggesting that the former may be somewhat corrupted by this artifact.

Most SWB research is based on the concept of *hedonic happiness*, which is a function of three separate components: positive affect, negative affect and life satisfaction. Affect refers to people's moods and emotions, and surveys of it might ask how often or to what extent the respondent feels or has felt interested, excited, inspired, guilty, bored or nervous, for example. Bradburn (1969) found that positive (or pleasant) affect and negative (or unpleasant) affect are unrelated and virtually uncorrelated with one another, but each correlated independently with a global well-being measure. In addition to the affective components of well-being, Andrews and Withey (1976) investigated the cognitive evaluation of life satisfaction, which, they claim, constitutes a third and distinct factor of well-being.

2.2. *The Economics of Happiness: Giving and Getting*

Despite some early and important contributions by economists to the literature (e.g., Easterlin 1974, Ng 1978, and van Praag and Kapteyn 1973), the scientific study of happiness only recently became a topic of intense interest and scholarship in economics. Economists have exhibited particular interest in the question "Does money buy happiness?" Broadly speaking, two schools of thought have evolved on this question, which propose that the relationship of happiness to income is either relative or absolute. The economist Richard Easterlin made seminal contributions (1973, 1974) to the relativist position and has asserted that happiness is based, not on one's absolute income, but on a comparison to others, which in turn depends on one's society

² It is interesting to note, however, that the direction of social desirability bias is culture dependent. Cross-country studies (e.g., Easterlin, 1995) suggest that in certain countries including the United States respondents are more inclined to profess happiness, whereas elsewhere (e.g., France and Italy) there is an opposite tendency: When asked if he was happy, Charles de Gaulle replied "What do you take me for, an idiot?," reflecting an assumption, incidentally, about the relationship between happiness and intelligence that is refuted by the data (see Diener, 1984).

and is adjusted as average incomes change. In more recent work, Easterlin has maintained his argument (1995) and based it on shifting aspirations (2001). In contrast, sociologist Ruut Veenhoven (1991), a leading proponent of the absolutist school, argues that increasing wealth at low levels of income helps satisfy basic needs and increases SWB, but after needs are satisfied additional income has little or no effect on happiness.³

Some studies, e.g., McBride (2001) and Ferrer-i-Carbonell (2005), corroborate the relative income effect on SWB,⁴ and others, e.g., Oswald (1997), find that absolute income matters. Blanchflower and Oswald (2004) find support for both relative and absolute income effects. Nevertheless, although the SWB-income relationship is usually significant, income still accounts for a modest fraction of the overall variance in individual happiness: Diener et al. (1993) point to less than 2%, and even Easterlin (2001), a strong advocate of the importance of relative income, cites a figure of 4%.⁵ Regardless of who is right in the debate between relativists and absolutists, most would agree that, at least for developed economies, increases in income will not substantially increase aggregate happiness, and some even claim income is detrimental to SWB.⁶ In any case, it appears that our concern with improving human welfare through greater material wealth is probably exaggerated, at least in economically developed countries.⁷

³ A referee has pointed out that this distinction is perhaps too stark: the absolutist and relativist schools are not mutually exclusive, and most relativists probably accept that average happiness is related to per capita GDP.

⁴ Senik (2004) finds evidence of the reverse relationship. This anomaly can still be reconciled within the relative income framework, however, if one accepts her explanation that others' income provides informational content about one's own future income.

⁵ On the other hand, Andrew Oswald has argued to us that this is a misleading way to think: although income explains only a small fraction of the SWB variance, with so much unaccounted for variance, the persistent SWB-income correlation is an important finding.

⁶ The marginal happiness of income appears to diminish quickly: lottery winners do not report being significantly happier than a control group (Brickman, Coates and Janoff-Bulman, 1978), and even the super rich, those among the Forbes' wealthiest Americans, are only slightly happier than the average (Diener, Horowitz and Emmons, 1985b). Apropos, the following quote has been attributed to Arnold Schwarzenegger: "Money doesn't make you happy. I now have \$50 million, but I was just as happy when I had \$48 million." Ferrer-i-Carbonell and Frijters (2004) conclude that to increase individual satisfaction by one point on an 11-point scale requires an 800,000% increase in income. Other researchers, including Robert Frank (1997), Robert Lane (2000) and Robert Putnam (2000), believe that greater average income is related to a trend of decreasing happiness. Frank argues that the pursuit of short-run material gains relative to others represents a "positional externality," which diminishes resources devoted to activities that do produce long-run happiness, such as time spent with family and friends. Consistent with such an externality, Luttmer (2005) produces compelling evidence that SWB is based on a comparison of earnings.

⁷ Indeed, the very preoccupation with material wealth or financial success may be harmful, as suggested by studies showing that more materialistic individuals experience lower levels of happiness and even enjoy their possessions

Consider now the evidence on the relationship between happiness and *giving*, rather than *getting*. Many studies find positive correlations between SWB and altruistic behavior or goals. One type of evidence comes from studies in which the experimenters first manipulate the mood of subjects, e.g., by letting subjects “find” a coin in a telephone booth or by letting them win or lose at a game, after which there is an opportunity to help, e.g., by aiding others with a task or by donating money to a charity (Harris and Smith, 1975, Isen, Horn and Rosenhan, 1973, Moore, Underwood and Rosenhan, 1973, Rosenhan, Underwood and Moore, 1974). Benson et al. (1980) identify a positive correlation between life satisfaction and time spent in a variety of helping activities. According to Phelps (2001), people with altruistic personalities report greater overall happiness, and she attributes stalling happiness in the US to a declining percentage of altruists in the population. Interestingly, happiness also seems to be unfavorably related to a willingness to hurt others: the experiments of Bosman and van Winden (2002) and Charness and Grosskopf (2001) indicate that subjects who reduce the payoffs of others are subsequently less happy.

Is there evidence, however, suggesting altruistic behavior *causes* greater happiness? Meier and Stutzer (2007) employ a natural experiment involving the collapse of East Germany and its volunteer structure to claim such causality. Using panel data, Thoits and Hewitt (2001) show that happier people are more inclined to volunteer but also that volunteer work causes greater happiness, life satisfaction, self-esteem and even physical health. Switzer et al. (1995) find that, in comparison to a control group, adolescent boys who were required to participate in service activities showed favorable changes in measures of SWB such as negative affect and self-esteem as well as in behavioral measures such as school and community involvement and problem behavior. Contributors to the recent movement called “positive psychology” regularly cite acts of kindness as an important intervention for attaining and maintaining higher levels of happiness. Boehm and Lyubomirsky (2006), for example, report that students instructed to perform random

less than others (Kasser and Ryan, 1993, Richins, McKeage and Najjar, 1992, Wright and Larsen, 1993). Another take on this suggested to us by Richard Easterlin is that those with lower relative incomes are both less happy and more concerned with material goals.

acts of kindness during a ten-week experiment achieve significantly higher levels of happiness relative to a control group, even through a one month follow-up. Other interventions have been examined over longer periods and proven beneficial 9-18 months later (Fordyce, 1983). It is striking that the behavioral interventions these researchers have found effective are relatively minor. The acts of kindness Boehm and Lyubomirsky mention include “holding the door open for a stranger” or “doing a roommate’s dishes.”⁸

Recent theoretical and empirical research by economists suggests that people who act in the narrowly selfish way typically assumed in economics might actually fail to maximize not only subjective, but even material, returns (e.g., Eshel, Samuelson and Shaked, 1998, Gintis et al., 2003, and McCabe, Rigdon and Smith, 2003). These findings about the subjective and material benefits of pro-social behavior lend credence to Abraham Maslow’s statement that “The neurotic is not emotionally sick; he is cognitively wrong.”

2.3. *The Psychology of Happiness: Hedonic and Eudaimonistic Schools*

There are, broadly speaking, two traditions in psychology to the study of well-being, which we will call the *hedonic* and *eudaimonistic schools*. The dominant hedonic school has a more *empirical* (or bottom-up) approach and is *outcome*-oriented, specifically, it stresses *subjective well-being*. The eudaimonistic approach, on the other hand, is more *theoretical* (or top-down) and emphasizes *process*, often characterized as progress toward *psychological well-being*. The theory, design and analysis of the current study are informed by both traditions, so they are reviewed briefly here (see Ryan and Deci, 2001, for further discussion of these two schools).

Although the methodology and terminology of the psychology literature on SWB may seem to have little in common with standard economics, the dominant traditions in both disciplines actually share common philosophical origins. The view of the hedonic school to well-being can

⁸ Emmons and McCullough (2003) focus on gratitude, rather than giving per se, but their intervention is related in that it both involves greater awareness of kind behavior and also sheds light on another aspect of this research. Specifically, one theme in this literature is the importance of making happiness-enhancing behavior habitual, although optimal timing is important: daily manipulation is more effective than weekly in the Emmons and McCullough study, but Boehm and Lyubomirsky find the reverse.

be traced to the Socratic doctrine that happiness is the highest good. Philosophical hedonism took this doctrine and held that the chief goal of life is to seek pleasure and to avoid pain, a tenet endorsed by utilitarians like Bentham (1789). In fact, this formed the foundation of Utilitarianism, which, in turn, exercised the principal philosophical influence on the direction taken by mainstream economics. In both psychology and economics, this tradition treats happiness (or pleasure or satisfaction) as an outcome and typically relates it empirically to various life conditions and circumstances. Important recent contributions in this spirit include Kahneman, Diener and Schwartz (1999) and Layard (2005).

The eudaimonistic school is considerably more difficult to describe, partly because of its theoretical complexity but also because of the absence of a clear consensus among its adherents on certain points. This school traces its origins to a different classical Hellenic philosophical tradition from the hedonic school, most notably to Aristotle (*Nicomachean Ethics*). The central construct is *eudaimonia* (pronounced yoo-die-muh-NEE-uh), which refers to well-being produced through a process of human growth and which Aristotle associated with virtuous action (one translation is “flourishing”). The first modern movement along these lines was “humanistic psychology” (e.g., Maslow, 1968, Rogers, 1961), which broke from most of psychology by focusing on healthy psychological functioning rather than pathology, similar to the recent positive psychology movement. Other versions have been called “psychological well-being” (e.g., Ryff, 1989) and “self-determination theory” (Ryan and Deci, 2000). Despite differences, we identify below four important points of agreement or consistent features in this literature.

First, the eudaimonistic approach stresses and distinguishes types of human needs (e.g., Maslow, 1968, and Erich Fromm, 1981). There are “lower” needs and desires, such as physiological needs for food, the satisfaction of which brings momentary pleasure, and then there are “higher” psychological needs, such as positive relations with others, the realization of which is conducive to growth and produces eudaimonia. Moreover, some conduct or outcomes that satisfy the first can undermine the second, e.g., eating in excess might bring transitory pleasure but not promote personal growth and the happiness that accompanies it.

Second, the goal is not subjective well-being, indeed, the focus is not on any outcome but rather on process, viz., progress consistent with psychological needs and individual-specific potentials, a process Maslow called *self-actualization*.⁹ Moreover, people can be more or less self-actualizing, i.e., they differ in the degree to which they realize their higher potentials.

Third, although subjective well-being is not the goal in the eudaimonistic school, it is seen as a favorable by-product of psychological well-being (PWB). This is eudaimonia, which is not PWB itself but rather the SWB generated by PWB. In addition, people with high PWB are reported to experience more pronounced positive extremes. Maslow described “peak experiences” of intensely favorable and pleasant emotions among many people who are self-actualizing. Similarly, Csikszentmihalyi and Csikszentmihalyi (1988) describe a “flow” state of extreme happiness in which one loses the sense of self and becomes absorbed, not with outcome, but rather with an activity of one’s choosing that is challenging but within one’s capabilities. In apparent contradiction to this, however, behavior aimed at higher needs is sometimes seen as detrimental to happiness. Ryff (1989), for example, writes that “realizing one’s goals or purpose in life is not always easy – it requires effort and discipline, which may at times be at odds with short-term happiness.”

Fourth, there are common themes among eudaimonists about the kinds of attitudes and behaviors that characterize PWB, but, on this point, there are also considerable differences about the particulars. In the broadest version, Aristotle associates well-being with a life of virtue. Modern approaches are more complex, but Kasser and his collaborators (2001, Sheldon and Kasser 1995) distill these into two categories based on personal goals: goals can be *intrinsic*, i.e., oriented toward self-acceptance, affiliation and community feeling, or *extrinsic*, i.e., oriented toward some external reward such as financial success, popularity and attractiveness. They find that intrinsic people (those whose goals are intrinsic) experience greater PWB and SWB than extrinsic people. In the positive psychology movement, Lyubomirsky and Sheldon (2006, 2005

⁹ Interestingly, this dovetails with recent work in economics by Frey and Stutzer (2005) on *procedural utility*, or the happiness associated with processes as opposed to outcomes.

with Schkade) draw a similar distinction between variables such as income, physical health, and geographic location, and activities that include joining a club, expressing gratitude, and helping others. They find that adopting the latter activities produce sustainable improvements in SWB but that the former variables do not.

2.4. *An Economic Interpretation of Psychological Well-Being*

At this point, we will recast psychological well-being in economic terms. This formulation captures the main theoretical structure as well as the stylized facts from the eudaimonistic school, but, as in the hedonic school, it focuses on happiness as the outcome and is descriptive.

Eudaimonists treat PWB as a set of personality characteristics, to which one can add through particular types of behavior. These behaviors might not produce immediate improvements in SWB, but they do improve PWB over time, which, in turn, generates subjective benefits, specifically better feelings, on average. In economic terms, one can think of stocks and flows of well-being.¹⁰ Graham and Oswald (2006) recently introduced formally the stock-flow concept into the happiness literature, and we consider this an important avenue for understanding well-being.¹¹ In our version, subjective well-being is a flow that is produced by the stock of psychological well-being (although SWB is also subject to external shocks). That is, PWB can be thought of as a set of personality characteristics, which varies across individuals, and higher PWB yields a higher average return in happiness terms. Specifically, this return is what is called eudaimonia, and, consistent with the emphasis in this school on feelings rather than cognition, implies greater positive affect and lower negative affect, but not necessarily greater satisfaction with life. As numerous contributors to this literature maintain, those high in PWB are also expected to experience higher peaks in their happiness.

Tying this back to generosity, we propose that altruistic behavior increases the stock of

¹⁰ Indeed, Fredrickson's broaden-and-build theory (2001), although focused on a different set of variables, resembles this idea of investing in well-being for future returns.

¹¹ Graham and Oswald call their stock and flow "hedonic capital" and "hedonic energy," respectively. Their model provides a clever explanation for *hedonic adaptation*, or the regression of SWB to historic levels after shocks. Our framework suggests a few added specifications, namely, that hedonic capital is best thought of as psychological well-being and that there are classes of contributions to the stock that can increase its steady state level and, consequently, the flow that proceeds from it.

PWB, which then supports a higher average flow of happiness. This is consistent with results from positive psychology that specific behaviors increase both PWB and SWB (Sheldon and Lyubomirsky, 2006) and that altruistic acts are one such type of behavior (Boehm and Lyubomirsky, 2006). This same literature suggests that what is important is the type and frequency of such acts rather than their size: very small acts of kindness suffice to increase well-being.¹² Conversely, high PWB people are more likely to be observed engaging in altruistic behavior, but this also follows from the fact that self-actualizing people have a stronger preference for behavior consistent with their high PWB. Thus, generosity is both a *long run cause* of psychological well-being through repeated acts as well as a *short run effect* of it, consistent with the previously cited findings of Thoits and Hewitt (2001) that volunteering both causes and is caused by high well-being.

This last point leads to a distinction between short run and long run. Although acts that support PWB are predicted to produce higher SWB in the long run, they do not necessarily have a favorable effect on SWB in the short run. The apparent contradiction in the eudaimonistic argument that self-actualizing behavior both increases and sometimes decreases happiness can be reconciled with this distinction between the short run and long run. In the current context, altruistic acts contribute to PWB and a higher average, i.e., long run, flow of SWB. In the short run, however, these acts can increase or decrease short run happiness depending on situation-specific factors.¹³ Eudaimonists claim, however, that certain other types of behavior, such as material pursuits, do not generate improvements in either psychological or subjective well-being.

The posited absence of a favorable effect of material well-being on long run happiness is broadly consistent with both experimental (e.g., McBride, 2006) and field (e.g., Easterlin, 2001)

¹² This makes sense as PWB is seen as a set of personality traits, and personality is relatively stable, so changing it is necessarily gradual (hence, the emphasis on habits in positive psychology). This has reasonable implications: one would expect a greater impact on a donor's PWB from repeated \$50 per week donations than from a once-in-a-lifetime donation of \$100,000, or from donating one pint of blood per month than from giving 12 pints once-a-year (apart from the catastrophic fact that the latter would more than exhaust the blood supply of the average adult).

¹³ The Konow (2006) study provides corroborative evidence of situation-specific effects: those results suggest that giving can impact short run affect favorably or unfavorably, depending on the distributive preference relevant to the context.

research indicating that people adapt to income, wealth and other life conditions (although *relative* income might still matter to *relative* happiness). At the same time, the conjecture concerning generosity and happiness is also in line with experimental (e.g., Charness and Grosskopf, 2001) and field evidence (e.g., Alesina, Di Tella and MacCulloch, 2004, Helliwell, 2006) suggesting social preferences are an important determinant of happiness. The experiment described in the next section examines this three way relationship between generosity, PWB and SWB, as well as alternative hypotheses, under carefully controlled conditions.

3. Experimental Procedures and Hypotheses

3.1. Experimental Procedures

In this section, the experimental method is discussed, and the details of the subject recruitment, laboratory protocol and experimental design are summarized.

The use of a laboratory experiment with student subjects raises two questions about the generality of the results.¹⁴ First, is the behavior of students representative of the general population? Experimental economists have now conducted various studies comparing student and non-student populations. In their review, Harrison and List (2004) report cases of student and non-students populations behaving in qualitatively similar ways, although they acknowledge the validity of the concern. Alatas et al. (2006) conclude that the results on subject pools are mixed. They report studies showing no effect of age in a variety of decision-making experiments but evidence of non-students acting more strongly on social preferences than students.

A second question is about the extent to which experimental findings apply outside the laboratory, i.e., the question of *external validity*. Here, as with the first question, the results are mixed, as Harrison and List (2004) conclude in their review of field experiments.¹⁵ Benz and

¹⁴ I think a referee for comments that helped frame this discussion.

¹⁵ A critical observation that is reasonable to raise about the current experiment is this: in the field, average donations as a percentage of income do not approach the usual dictator transfers as a percentage of experimental endowments. Nevertheless, two considerations help allay this concern. First, as Andreoni (2006) points out, most people donate chiefly when prompted to do so, even in the field (e.g., church donation plates, mail and television requests, Salvation Army bell-ringers). Since the dictator experiment creates a prompt, this is not, in fact, unlike giving in many real world situations. Second, it is not clear that donations should be compared to endowments in the experiment and to income in the field, especially in light of the first point. Donors might, in both cases, be

Meier (2006), however, relate the charitable donations of students in the field with the charitable donations of the same students in a laboratory dictator experiment. They find the decisions in the two settings to be significantly correlated and, in light of related research, strong. Two field studies by Frey and Meier using students also shed light on these issues. Using panel data, they report (2004a) that a significant fraction of a student population voluntarily donates anonymously to others, even over a period of several years, but that there is considerable heterogeneity in individual willingness. They also find that institutional conditions matter and that contribution rates vary directly with expected contribution rates of others. On the latter point, however, the causality is unclear: one might contribute because others are expected to do so, or this correlation could be due to a false consensus effect, i.e., one who contributes is more likely to think that others will also contribute. In fact, a field experiment by Frey and Meier (2004b) finds that causality runs in both directions. These studies corroborate laboratory findings on pro-social behavior and extend the evidence on important factors that influence such behavior.

In terms of the current study, a dictator experiment was employed in order to provide a clean and transparent measure of generosity: one subject (the dictator) is endowed with a sum of money that he or she may share with an anonymous counterpart (the recipient); the recipient has no recourse. Subjects were recruited in one of two ways: some signed up to fulfill a course requirement for undergraduate economics and psychology classes and others were recruited from undergraduate social science classes. Subjects were at no time told the purpose of the experiment, and subsequent queries of several students suggest that they did not surmise it. All dictator sessions involved a total of 24 subjects: 12 dictators and 12 recipients. All subjects first showed up at a common room, Room A, of the economics laboratory where they were individually registered, received a \$5 show-up fee and drew lots to determine whether they then stayed in Room A (dictators) or went to Room B (recipients).¹⁶

responding to the prompt and choosing an amount relative to their total income. Nevertheless, to test the relevance of subject pool and method, the next step should be to conduct a field study with a more general population, following the recommendation of Harrison and List to examine behavior in both the laboratory and the field.

¹⁶ It was decided that all subjects would initially appear in the same room in order to dispel any doubts about the

Given the previously cited evidence that lack of anonymity influences SWB responses and dictator generosity, a *double-blind* procedure was used. That is, neither the other subjects nor the experimenters knew the responses or gifts of any specific subject. Subjects were informed of the various measures taken to ensure anonymity on a General Instructions sheet from their unmarked packet of materials. This sheet also informed subjects that they were “being asked to answer a series of questions on a variety of topics,” and informed Room A subjects of the additional \$10 fee they would receive for filling out the questionnaire. At this point, neither Room A nor Room B subjects were informed that the former would later be able to allocate money to the latter.

The experiment then proceeds as follows. Subjects in both rooms begin filling out the Main Questionnaire that consists of eight sections of questions related to subjective and psychological well-being. After 20 minutes, they place the questionnaire in an envelope marked “1,” seal the envelope and return it to the packet. At this point, the subjects in Room A remove two envelopes, one labeled “Keep” and the other “Return.” Subjects in both rooms remove a sheet marked “Payment Information,” which informs them that Room A subjects are now being paid \$10 for completing the questionnaires and that Room B subjects have completed the same questionnaires but receive no compensation beyond the \$5 everyone received at the start. Each subject in Room A, however, may put any combination of one dollar bills and blank slips of paper in the Return envelope, to be given later to a randomly chosen person in Room B, and put the rest in his or her Keep envelope.¹⁷ Subjects are given five minutes to make their decision, pocket the Keep

existence of the other subjects, an issue that surfaced among some subjects in earlier dictator experiments with this subject pool (Konow, 2000). Previous experiments (Ball and Cech, 1996), including dictator experiments (Eckel and Grossman, 1998), have shown that subject generosity may differ when all subjects are the same sex. Therefore, male and female subjects drew from separate containers in each of which there was an equal number of Room A and Room B slips. This ensured an equal proportion of men and women in each room, although there were, on average, more women than men in both rooms. Of those who ultimately participated, 62% were female and 38% male, a proportion that does not differ at the 5% level of significance from the 57% females ($p=0.180$) among the general undergraduate population at the university or from the 56% females ($p=0.085$) among undergraduate students nationwide (U.S. Department of Education, 2000). All sessions were conducted November 1998, except for two Control sessions, which were conducted November 2000.

¹⁷ The procedures and instructional wording are modeled closely on Hoffman et al.’s (1994) Double Blind 2 treatment with certain necessary changes. In some ways, these anonymity procedures exceed theirs: the blank slips are made of “money paper,” which has a color and consistency similar to actual money, and the donation is sealed twice, once in the “Return” envelope and again in the packet.

envelope and seal and return the Return envelope to the packet.

Subjects in both rooms then complete brief Follow-up Questions, seal the form and return it to the packet. The packet is sealed, and each subject proceeds individually to place it in the box. Subjects in both rooms fill out receipts, Subject Pool Participation Slips, where applicable, and a Subject Pool Questionnaire (which requests anonymous demographic information). Thereafter, Room A subjects are free to go. Their packets are opened, the dollar bills and blanks are counted and the dollars are replaced in the Return envelopes, which are then taken to Room B where they are individually and randomly distributed to Room B subjects as they depart.

Each of the eight sections of the Main Questionnaire contained separate instruments: seven well-being surveys and the MC Social Desirability Scale, which was included to gauge any residual response bias.¹⁸ Among the many well-being instruments available, the ones used were chosen to represent a wide range of theories and methodologies and to test certain hypotheses about the potential relationship between happiness and generosity. In addition, the aim was to employ compact and easily administered measures, most of which have been previously tested in a variety of circumstances and on different subject pools. One section is an exception and presents a new set of questions. Nevertheless, the answer format for these questions is similar to Fordyce's *Happiness Measures* (1988), eliciting responses to four single-item questions on a nine-point scale that ranges from "extremely unhappy" to "extremely happy." The four new questions are "Over the past week, what is the *lowest* level you experienced?" (*LH*), "Over the past week, what is the *highest* level you experienced?" (*HH*), "Overall, how would you describe yourself?" (*OH*) and "Right now, how would you describe yourself?" (*NH*). We considered it important to include items that explicitly use the word "happy" or its cognates.

Three sections of the questionnaire examine the affective dimension of SWB, two dealing with overall or *long-run affect* and one with transient or *short-run affect*. One of the former is Bradburn's (1969) five positive affect (*PA*) and five negative affect (*NA*) items, and the other is

¹⁸ The Appendix, which is available on request from the corresponding author, contains the items upon which these measures are based in addition to two material well-being questions that were in the Follow-up Questions.

Watson, Clark and Tellegen's (1988) Positive and Negative Affect Schedule Scales, which ask subjects to evaluate their mood *on the average* by rating 10 positive affect (*PAS*) and 10 negative affect (*NAS*) adjectives. A measure of short-run affect, or mood, is Batson, et al.'s (1988) Mood Index (*MI*), which contains seven items that make up the single scale and eight unrelated items that serve as so-called "fillers" used to reduce hypothesis guessing. To capture cognitive life satisfaction, Diener et al.'s (1985a) five item Satisfaction with Life Scale (*SWL*) was administered. Measures of psychological well-being include Jones and Crandall's (1986) compact 15 item, single-scale Self-Actualization Index (*SAI*), and the three-item per scale version of Ryff and Keyes' (1995) six Scales of Psychological Well-Being. For the latter, we construct a single scale index (*PWBI*) rather than work with the six different scales.

The Follow-up Questions, which trail the allocation decision, consist of the Mood Index for a second time (*MI2*) and two questions about material well-being (MWB). In most studies the latter is represented by family income, but for this population, income is a problematic measure of MWB. Since many students rely heavily on parents and other sources for financial support, the students with higher incomes (being mostly earnings to support their education) are potentially exactly the ones who are less well off materially. We addressed this by asking for two values that seem both relevant and simple enough that most students could answer them reliably. One is the subject's total expenditures in dollars this school year.¹⁹ This variable, however, omits in-kind benefits (e.g., an automobile provided by parents) and ignores the fact that current expenditures can represent future decreases in MWB (i.e., through student loans). We also include, therefore, the gross annual income of the subject's parents with possible responses grouped at \$25,000 intervals into seven categories, the seventh being \$150,000 or more. This is an alternative measure of current MWB and, to the extent current and past parents' incomes are similar relative to their means, it also helps capture the cumulative or formative effect of relative affluence. The

¹⁹ Basic expenses on tuition, room and board averaged around \$24,000 at this university, and most of the variation in expenditures should reflect differences in their discretionary expenditures and current standard of living. The approximately 14% of respondents reporting expenditures below \$24,000 presumably include students living at home as well as part-time students.

discrete answer format was chosen for this question after initial surveys suggested that students appear more confident about ranges than about specific dollar amounts of parents' income.²⁰

The redundant measures of crucial variables, including positive affect, negative affect, short run affect, psychological well-being and material well-being, that were built into this study provide a rare opportunity to examine the robustness of any effects involving those variables. All SWB measures were collected in the Main Questionnaire prior to the allocation phase, indeed, before subjects in either room knew they were advantaged as dictators or disadvantaged as recipients. There were several reasons for this, including to clarify the size of the task and to avoid any bias in SWB scores due to subject inferences about the purpose of the experiment or expected compensation. Apart from these concerns, the timing should not matter for measures of long-run SWB. Prior collection of the measures did, however, enable us to repeat a measure of transient affect after the payment information phase in order to test for any effect of generosity on short-run SWB. Specifically, we examine whether dictator generosity causes a change in mood (*MID*) by subtracting the Mood Index prior to the allocation (*MI1*) from that immediately following the decision (*MI2*), similar to Batson, et al. (1988). As a basis of comparison for this mood change, a Control treatment was conducted with a separate group of subjects. The Control treatment was identical to the Dictator treatment described thus far except for the omission of any opportunity for Room A subjects to transfer any part of their \$10 to Room B subjects, a fact that was communicated to both rooms during the payment information phase.

A total of 186 subjects participated in this experiment consisting of 96 subjects in the four

²⁰ One astute reader pointed out that what matters is parents' disposable income, which varies, among other reasons, with the number of offspring. This argument makes sense, but there are at least two other considerations that make it problematic to implement in this study. First, on a conceptual point, to the extent parents' income captures formative influences of relative affluence, many of these effects have the quality of public goods and diminish, therefore, the importance of the variable costs of children: the presence of books, usually well educated parents, good school district, etc. Second, from a practical standpoint, it is likely that gross income was actually a less noisy variable than net income given the same considerations that motivated using ranges of parents' income rather than dollars: students usually do not know parents' income but rather are estimating it, and, in the US where this study was conducted, almost all personally shared information on income is about gross rather than net income. On a separate point, another reader recommended expected future income for a student population. Perhaps, but we are unaware of any research on students suggesting that this would be more strongly related to SWB than current material well-being. Another possible proxy is the subject's major, but, in order to protect subject anonymity, we deliberately avoided eliciting demographic information in any way that it could be associated with other individual responses.

sessions of the Dictator treatment (12 pairs of subjects per session) and 90 subjects in the four Control treatment (10 to 12 pairs per session). Total compensation per subject ranged from no less than \$5 to no more than \$15 and averaged \$10. The sessions lasted on average about 45 minutes such that, on an hourly basis, total compensation was a little over \$13 per hour. Moreover, after participating and receiving their payment, 96% of the 183 subjects responding indicated that they would be willing to participate in other economics experiments.

3.2. Experimental Hypotheses

If generosity is, in fact, favorably correlated with SWB, this section presents four different explanations about the underlying causal relationships. These four hypotheses are summarized in Figure 1, which lists the variables, the specific measures used to test them and whether the predicted relationship to a given measure is direct (+) or inverse (–).

Generosity Hypothesis: One explanation is that generosity causes happiness, i.e., people give because it makes them feel better. Positive correlations between dictator gifts and long-run measures of SWB are consistent with this hypothesis, if one assumes that 1) current giving is representative of past patterns of giving, and 2) benefits accumulate to improve long-run SWB. But this is non-specific evidence on this hypothesis, because all of the causal relationships we will examine are consistent with such a correlation, including ones that posit direct causation in the opposite direction and indirect causation through tertiary factors. As specific evidence of the Generosity Hypothesis, therefore, we consider the following: more generous dictators experience an improvement in short-run happiness. Indeed, if generosity favorably affects long-run SWB, one would expect it to impact short-run SWB a fortiori. In the context of the experiment, we take generosity as the size of the dictator gift, and the effect on short run happiness is measured by the change in mood index (*MID*). The *MID* of dictators who give can also be compared with those who do not. To examine a possible self-selection bias, however, one can also compare these *MID* scores with those of Room A subjects in the Control sessions who had no opportunity to share.

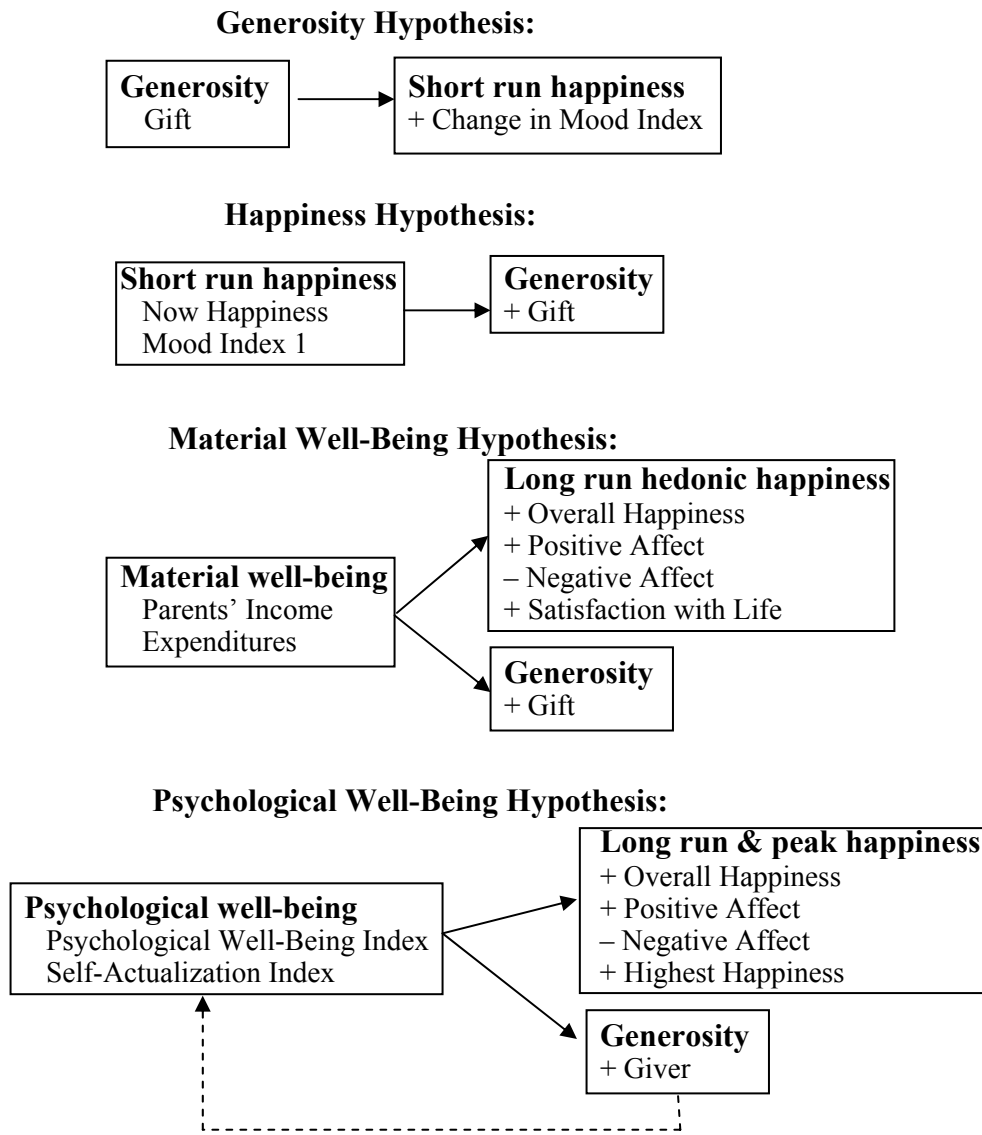


Figure 1. Summary of Hypotheses

Happiness Hypothesis: This explanation reverses the causality of the previous one and proposes that happiness causes generosity: people act on emotion, and those who feel better give more. As with the previous hypothesis, a correlation between long-run SWB and generosity is inconclusive regarding causality. Thus, the Happiness Hypothesis proposes that more favorable short-run happiness results in larger gifts. Specifically, the global measure of happiness now (*NH*) and the index of mood (*MII*), both taken just prior to the allocation decision, provide two possible measures of short-run SWB that is posited to increase the size of gifts.

Material Well-Being Hypothesis: An alternative explanation is that both generosity and happiness are caused by the third factor of material well-being.²¹ The Material Well-Being Hypothesis states that greater MWB causes improved SWB and, assuming giving is a normal good, leads to larger dictator gifts. The chief indicators of the subjects' material means are the two measures of MWB reported by them. Consistent with the hedonic tradition, this hypothesis relates to the stable causes and correlates of happiness, so we take SWB to be long run hedonic happiness, i.e., materially advantaged subjects are predicted to score higher on overall happiness, positive affect and life satisfaction, and lower on negative affect.

Psychological Well-Being Hypothesis: This explanation is based on the interpretation of PWB proposed previously in section 2.4. It posits that the tertiary factor of psychological well-being causes both happiness and generosity. The reader will remember that this framework proposes that repeated acts of generosity contribute to higher PWB in the long run, which is indicated by the dashed line pointing from Generosity to PWB in Figure 1. But this is not the causal relation being measured, since this is a one-time experiment rather than a longitudinal study: subjects bring their “stock” of PWB into the laboratory (with all of the previous behavior that has determined it), complete questionnaires on PWB and SWB, and *only then* choose their allocations.²² In this manner, then, we examine whether PWB appears to contribute to long run happiness and to short run generosity. Specifically, PWB is measured by the Psychological Well-Being Index (*PWBI*) and the Self-Actualization Index (*SAT*).²³ As described in section 2.4, the

²¹ Interestingly, Kenny (1999) and Lyubomirsky, King and Diener (2005) report evidence that happiness causes MWB, viz., stronger economic growth in the former study and higher personal income in the latter.

²² Although such a measure was not included in this study, Konow (2007) does find, however, that previous service activities are significantly and positively related to dictator generosity.

²³ Since Ryff sees PWB as multi-dimensional, her Scales of Psychological Well-Being involve six separate scales, but, for reasons of brevity and reliability, we constructed a single scale index using a subset of the original items. In this context, reliability refers to the extent to which items assess the same quality (related to the strength of inter-item correlations), but the six scales represent independent aspects of PWB. In addition, the abbreviated version we used consists of only three items per scale, which have similarly low reliability, especially since they were deliberately chosen for conceptual breadth rather than reliability (see Ryff and Keyes, 1995). In order to form a single scale that incorporates all six of Ryff's dimensions while seeking to favor reliability, we constructed the *PWBI* as follows: we identified the significant inter-item correlations ($p < .05$), and, for each of the six scales, selected the one item that had the highest average inter-item correlation. The resulting index consists of six items with their unweighted scores summed (and reverse-scored, where applicable). Compared to an index composed of all items (which we used in a previous draft of this paper), this scale has a somewhat higher average inter-item covariance and yields qualitatively

claim is that people with higher PWB experience greater long run happiness in the affective dimensions as well as higher peaks, so we predict they will register higher overall happiness, higher positive affect, lower negative affect and greater highest happiness. Finally, dictators high in PWB should more likely be what we will call “Givers,” or subjects who give something (as opposed to those who give nothing). But, based on previous findings reviewed above, we are agnostic about the size of the gift: the eudaimonistic literature indicates that the optimal “challenge” can be too small or too large, and positive psychology research suggests that very small acts of kindness suffice to change well-being. Thus, dictator PWB should be directly related to the likelihood of their being Givers, but not necessarily to the size of their gifts.

4. Results and Analysis

The experiment produced a rich data set. The Main Questionnaire and Follow-up Questions, which all subjects completed, comprise 137 usable responses per subject. Given the 186 participants, this means there are 25,482 potential data points. Reassuringly, only three of these 25,482 items (or 0.01%) were not answered.²⁴ For dictators, an additional item is their allocation. The Subject Pool Questionnaire also posed seven demographic questions, which followed the experiment and cannot be associated with the responses there. It confirmed that these subjects were representative of the general student population in terms of gender, ethnicity and college of major, although they were, on average, younger, having been drawn from lower division classes. We consider first generosity and well-being and whether they are correlated, and then we analyze the evidence on the four hypotheses about the causal relationship between the two.

4.1. Generosity and Well-Being

Table 1 shows the Spearman-rank correlation coefficients, and below them the p -values, for the subjective and psychological well-being measures using the pooled sample from all sessions

the same results for the tests reported here, although the significance level is usually higher.

²⁴ These three items were reconstructed as the mean of their responses to other questions in each respective category. Actually, there was a 138th question that was frequently left blank and is not counted among the variables reported. This question asked for a second time, following the allocation phase, the *NH* question. The large number of non-responses was obviously due to the fact that it was overlooked by many subjects because of how it appeared on the form.

**Table 1. Spearman Correlation Matrix for Subjective and Psychological Well-Being Measures
(correlation coefficients and *p*-values)**

	<i>OH</i>	<i>PA</i>	<i>NA</i>	<i>ABS</i>	<i>PAS</i>	<i>NAS</i>	<i>NH</i>	<i>MII</i>	<i>MI2</i>	<i>HH</i>	<i>LH</i>	<i>SWL</i>	<i>SAI</i>
Overall Happiness (<i>OH</i>)													
Bradburn's Positive Affect (<i>PA</i>)	0.35 0.001												
Bradburn's Negative Affect (<i>NA</i>)	-0.25 0.001	-0.02 0.837											
Affect Balance Scale (<i>ABS</i>)	0.39 0.001	0.54 0.001	-0.83 0.001										
Positive Affect Schedule (<i>PAS</i>)	0.47 0.001	0.35 0.001	-0.16 0.030	0.32 0.001									
Negative Affect Schedule (<i>NAS</i>)	-0.31 0.001	-0.20 0.006	0.42 0.001	-0.45 0.001	-0.26 0.001								
Now Happiness (<i>NH</i>)	0.47 0.001	0.31 0.001	-0.20 0.007	0.35 0.001	0.37 0.001	-0.25 0.001							
Mood Index 1 (<i>MII</i>)	0.47 0.001	0.25 0.001	-0.27 0.001	0.36 0.001	0.35 0.001	-0.37 0.001	0.67 0.001						
Mood Index 2 (<i>MI2</i>)	0.29 0.001	0.25 0.001	-0.20 0.006	0.32 0.001	0.36 0.001	-0.17 0.019	0.41 0.001	0.47 0.001					
Highest Happiness (<i>HH</i>)	0.42 0.001	0.34 0.001	-0.14 0.061	0.30 0.001	0.28 0.001	-0.27 0.001	0.35 0.001	0.37 0.001	0.23 0.002				
Lowest Happiness (<i>LH</i>)	0.32 0.001	0.21 0.004	-0.29 0.001	0.38 0.001	0.12 0.102	-0.25 0.001	0.29 0.001	0.34 0.001	0.20 0.006	0.21 0.005			
Satisfaction with Life (<i>SWL</i>)	0.48 0.001	0.31 0.001	-0.35 0.001	0.47 0.001	0.44 0.001	-0.33 0.001	0.42 0.001	0.37 0.001	0.35 0.001	0.35 0.001	0.23 0.002		
Self-Actualization Index (<i>SAI</i>)	0.31 0.001	0.23 0.001	-0.23 0.002	0.32 0.001	0.46 0.001	-0.32 0.001	0.23 0.002	0.28 0.001	0.32 0.001	0.22 0.002	0.07 0.311	0.28 0.001	
Psych. Well-Being Index (<i>PWBI</i>)	0.42 0.001	0.35 0.001	-0.21 0.001	0.37 0.001	0.43 0.001	-0.41 0.001	0.29 0.001	0.38 0.001	0.26 0.001	0.31 0.001	0.13 0.061	0.53 0.001	0.48 0.001

n=186

Table 2. Spearman Correlation Matrix for Subjective and Psychological Well-Being with MC Social Desirability Scale and Material Well-Being (correlation coefficients and *p*-values)

	<i>OH</i>	<i>PA</i>	<i>NA</i>	<i>ABS</i>	<i>PAS</i>	<i>NAS</i>	<i>NH</i>	<i>MII</i>	<i>MI2</i>	<i>HH</i>	<i>LH</i>	<i>SWL</i>	<i>SAI</i>	<i>PWBI</i>	<i>n</i>
Marlowe-Crowne scale (<i>MC</i>)	0.13 0.083	-0.07 0.347	-0.24 0.001	0.14 0.055	0.27 0.001	-0.26 0.001	0.15 0.038	0.24 0.001	0.25 0.001	0.16 0.028	0.17 0.021	0.34 0.001	0.26 0.001	0.28 0.001	186
School year expenditures (\$)	0.03 0.700	0.03 0.707	0.08 0.264	-0.07 0.320	-0.04 0.616	0.00 0.953	-0.02 0.761	-0.03 0.682	-0.05 0.474	0.01 0.854	-0.08 0.246	-0.04 0.602	-0.09 0.218	-0.03 0.694	185
Parent's income	0.01 0.869	0.05 0.490	0.03 0.706	0.04 0.564	0.02 0.777	-0.02 0.776	-0.04 0.563	-0.02 0.742	-0.08 0.267	-0.05 0.518	-0.02 0.788	0.12 0.101	-0.07 0.369	-0.04 0.568	186

and rooms of the experiment. Although we otherwise treat *PA* and *NA* separately, their sum, which is the Affect Balance Scale (*ABS*), is often reported and we also do so here. All of the 91 correlations are the expected sign, and all but five are significant at the 5% level, as indicated by bold-type. These results are consistent with predictions about the SWB measures and support the use of the new single-item happiness questions.

The Spearman correlations for all subjects of the subjective and psychological well-being measures with the Marlowe-Crowne social desirability (MC) scale and material well-being are summarized in Table 2. Of the 14 well-being measures, 11 correlate significantly with the MC scale. These correlations, though, are typically weaker than those of SWB measures with one another, and the MC scale accounts for no more than 10% of the variance of any variable. So, these measures appear to be somewhat compromised, a fact of which one should take account. Nevertheless, this effect is not serious, an inference reinforced by results reported later. Thus, the anonymity measures were quite successful, and the subjects felt free to be candid (moreover, the residual correlations may reflect a genuine relationship between SWB and socially oriented behavior). Not one of the 14 subjective and psychological well-being measures is significantly correlated with either of the two measures of MWB. In fact, only one of these 28 correlations is significant even at the 20% level. This finding is not due to a lack of variation in MWB, as illustrated in Figure 2A, which shows the distribution of expenditures during the school year, and Figure 2B, which shows the annual income of parents.

Figure 3 illustrates the distribution of gifts from Room A dictators to Room B recipients. The modal gift is nothing at all, which was chosen by 40% of dictators, followed by an even \$5 split (19%) and the minimum gift of \$1 (17%), which is also the median. The mean allocation to Room B among all Room A dictators is \$2.25 and among just those who gave any positive amount is \$3.72. These transfers are at a typical level for dictator experiments, approximately intermediate to the somewhat lower transfers in the Hoffman, et al. (1994) Double Blind 2 treatment and the somewhat higher transfers in their replication of the Forsythe, et al. (1994) dictator experiment.

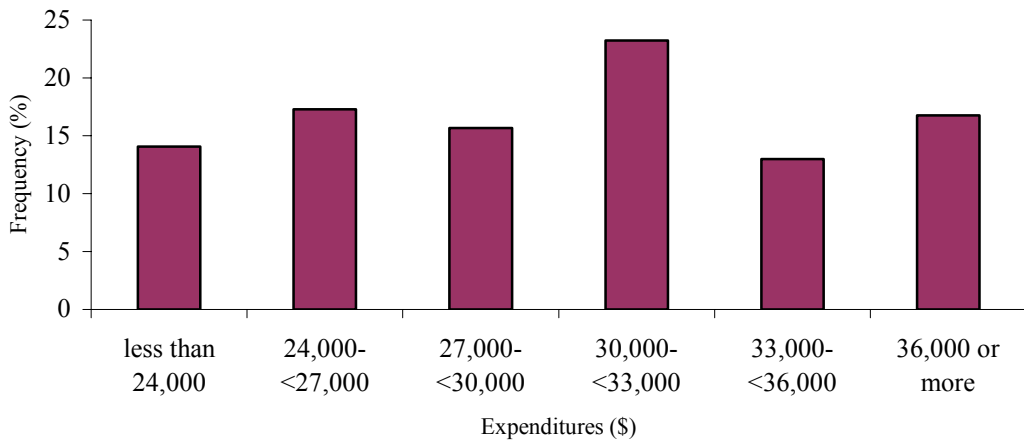


Figure 2A. Expenditures of Subjects

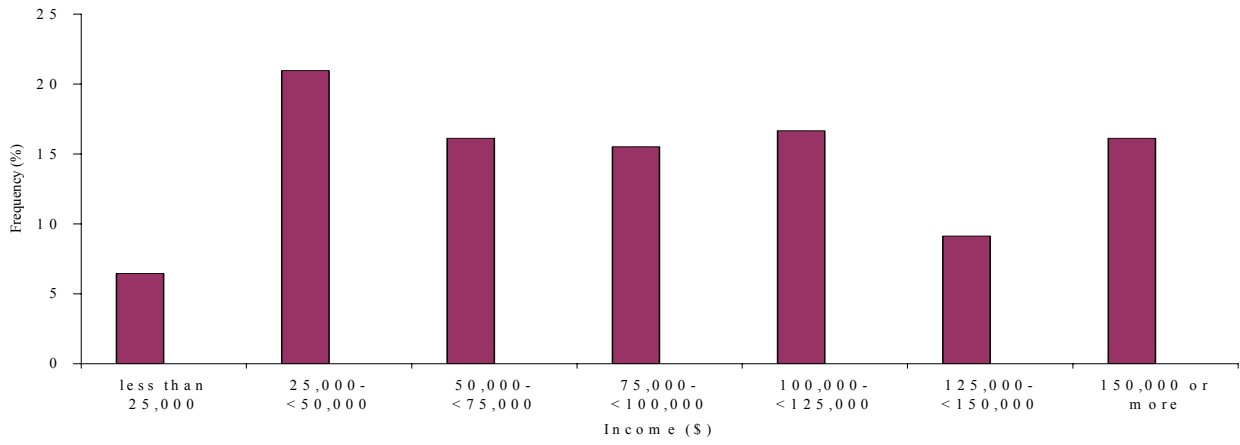


Figure 2B. Annual Income of Parents

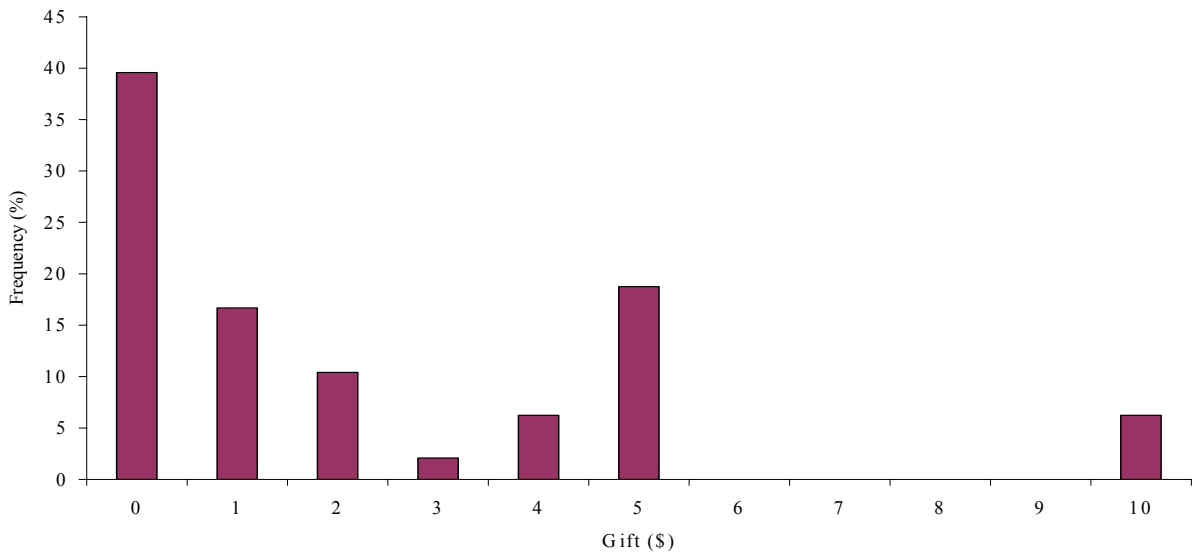


Figure 3. Dictator Gifts

**Table 3. Well-Being of Dictators
(mean scores)**

Subjective Well-Being	Givers	Nongivers	Givers better/(worse) off than Nongivers (% Std Dev)
<i>Long-run Happiness/Affect</i>			
Overall Happiness (<i>OH</i>)	6.83	6.26	51**
Bradburn's Positive Affect (<i>PA</i>)	4.41	3.53	82**
Bradburn's Negative Affect (<i>NA</i>)	3.38	2.63	(56)
Positive Affect Schedule (<i>PAS</i>)	38.86	36.95	41*
Negative Affect Schedule (<i>NAS</i>)	21.14	24.74	52**
<i>Highest/Lowest Happiness</i>			
Highest Happiness (<i>HH</i>)	8.00	7.37	59**
Lowest Happiness (<i>LH</i>)	3.03	3.05	(2)
<i>Short-run Happiness/Affect</i>			
Now Happiness (<i>NH</i>)	5.76	6.00	(16)
Mood Index Difference (<i>MID</i>)	0.67	0.51	14
<i>Life Satisfaction</i>			
Satisfaction with Life (<i>SWL</i>)	24.14	24.37	(4)
Psychological Well-Being			
Psychological Well-Being Index (<i>PWBI</i>)	31.36	28.63	73**
Self-Actualization Index (<i>SAI</i>)	46.69	43.68	57**
Material Well-Being			
School year expenditures (\$)	27,314	26,421	16
Parents' income	3.45	3.26	11

Notes: ** indicates significance at the 10/5% level according to one-tail *t*-tests of the null hypothesis that Givers are better off than Nongivers (e.g., that they have higher positive affect, lower negative affect, higher income, etc.); parents' income is on a point scale, with each point representing \$25,000 (i.e., 3 is \$50,000-<\$75,000, 4 is \$75,000-<\$100,000, etc.); n=48.

Turning now to the relationship between dictator generosity and well-being, Table 3 summarizes the mean scores on well-being measures of dictators, who have been bifurcated into those who transferred \$1 or more (the Givers) and those who kept the entire \$10 (the Nongivers). The final column shows the difference between the two mean scores expressed as a percentage of standard deviation, whereby parentheses designate a worse score for Givers (e.g., lower happiness or higher negative affect). Most measures of long-run happiness or affect are consistent with Givers being happier: they score significantly higher in terms of overall happiness (*OH*), positive affect (*PA*) but not significantly lower on negative affect (*NA*), according to the Bradburn scales,

whereas they experience more positive (*PAS*, $p=.08$) and less negative affect (*NAS*), according to the PANAS scales. The one surprising result here concerns Bradburn's measure of negative affect. We conducted numerous additional tests on this instrument and found that the relation of *NA* to generosity is usually insignificant or, occasionally as here, contrary to any established hypothesis about generosity and happiness and opposite the direction indicated by every other significant measure. We conclude that *NA* is not a helpful indicator in the context of this experiment and omit it from further analysis.²⁵

Of the remaining measures of subjective well-being, only highest happiness (*HH*) is significant: Givers reach significantly higher peaks than Nongivers. Lowest happiness (*LH*) is not significant, implying that both groups experience on average similar weekly lows around the third point on the scale: "unhappy." The measures of short-run happiness and affect, happiness now (*NH*) and the change in mood index (*MID*), also do not differ. The cognitive measure of long-run SWB, satisfaction with life (*SWL*), is statistically equal for both groups. Psychological well-being, on the other hand, is significantly greater for Givers, according to both measures: the psychological well-being index (*PWBI*) and the self-actualization index (*SAI*). Finally, the MWB of Givers, as measured by their own expenditures and their parent's income, is not significantly greater than that of Nongivers, suggesting that this does not account for differences in giving, anymore than it explained differences in SWB.

Given the low variance that is typical for SWB data, comparing mean scores understates the magnitude of differences between Givers and Nongivers. Of the statistically significant differences in long run happiness, the mean difference between Givers and Nongivers is equal to 41% to 82% of a standard deviation. Givers have higher peak happiness by 59% of a standard deviation, and their psychological well-being is greater by 57% to 73% of a standard deviation.

²⁵ The finding about *NA* may be an artifact: whereas *NAS* measures average affect, *NA* may be capturing more the recent occurrence of affective experiences (the largest anomalous difference between Givers and Nongivers on *NA* occurred on the question "During the past few weeks did you ever feel upset because someone criticized you?"). One possible explanation for the differing results between the *NA* and *NAS* scales is that, *ceteris paribus*, generosity is associated with less negative affect but with greater negative affective experiences, whereby the latter promote sharing by sharpening dictators' awareness of the effects of unkind behavior.

Put another way, the differences in mean scores relative to the number of points on each respective scale ranges from 5% for *PAS* to 15% for *PA*. By comparison, the equivalent differences for a variety of dramatic life events are 3% for winning the lottery (Brickman et al., 1978), 7% for being one of the Forbes superrich (Diener et al., 1985b), 14% for becoming a paraplegic accident victim (Brickman, et al., 1978) and 12% for being unemployed (Clark and Oswald, 1994). As examples, Figures 4A, 4B and 4C illustrate the frequency distributions of responses for three measures for Givers versus Nongivers: Overall happiness (*OH*), Bradburn's positive affect (*PA*) and the self-actualization index (*SAI*).

Thus, there is evidence from the summary statistics presented so far of a favorable relationship between generosity and well-being, in particular, with long-run measures of affect, of overall and peak happiness, and of psychological well-being. The analysis turns now to multivariate regression, which treats the various well-being measures as dependent variables and giving, MWB, MC scores and recruitment technique as independent variables. Since the dependent variable here is ordinal, we employ a method that also enables us to evaluate scales qualitatively. Based on both theory and practice, ordered logit and ordered probit are generally regarded as equally valid procedures for the purpose at hand (Allison, 1999 and Greene, 1997). We use ordered logit (or logistic regression) since it produces a nice statistic, called the *odds ratio*, not generated by ordered probit, for interpreting the impact of independent variables.²⁶

Various regressions were conducted with different specifications for giving. Independent variables included gift in dollars, gift plus gift squared, log of gift, and a dummy variable for Giver equal to 1 if the dictator gave \$1 or more and to 0 if he or she gave nothing. These

²⁶ To understand this technique, consider first a binary logit model in which the left-hand side variable is a dichotomous outcome, e.g., happy or unhappy. If p_i is the probability of event i , then the odds ratio is simply $\frac{p_i}{1-p_i}$.

For example, if the probability of subject i being happy is 0.75, then his odds of being happy is the probability of being happy divided by the probability of being unhappy, or $3=0.75/0.25$ (sometimes expressed 3:1 or 3 to 1). Similarly, if $p_i=0.25$, the odds ratio equals 1/3, and if $p_i=0.5$, the odds ratio equals 1. The left-hand side variable in the logit model is the log of the odds ratio, called the *logit*. Ordered logit is the logical extension of binary logit to three or more ordered categories, e.g., happy, neutral and unhappy. Maximum likelihood estimates of parameters are calculated for both the left-hand side variables (measures of well-being) and the right-hand side variables (e.g., measures of generosity, MWB, etc.).

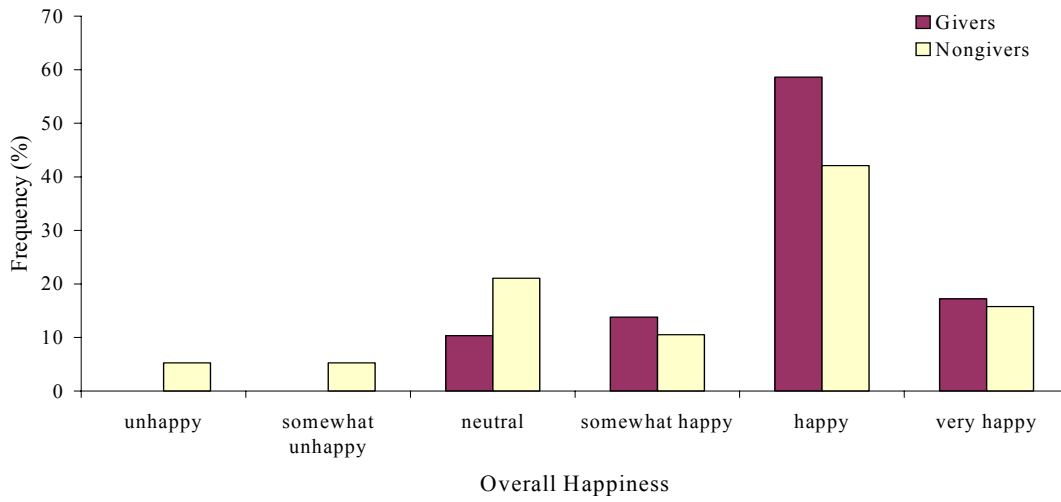


Figure 4A. Overall Happiness for Dictators

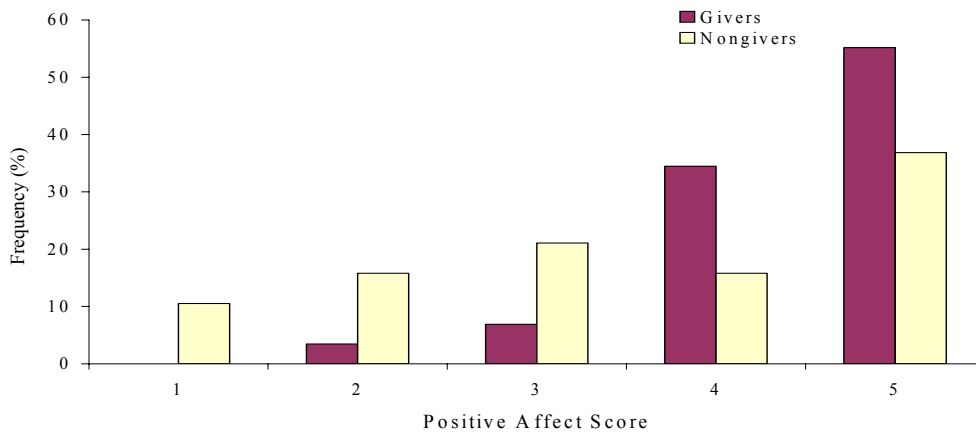


Figure 4B. Bradburn's Positive Affect for Dictators



Figure 4C. Self-Actualization Index for Dictators

**Table 4. Summary of Ordered Logit Regression Results
Coefficients (Odds ratios)**

<u>Subjective Well-Being</u>	<u>Giver dummy</u>	<u>Material well-being Expenditures (\$1000)</u>	<u>Parents' Income</u>	<u>Marlowe-Crowne scale</u>	<u>Recruitment dummy</u>
<i>Long-run Happiness/Affect</i>					
Overall Happiness (<i>OH</i>)	1.07 (2.92)* 0.96 (2.61)*	-0.13 (0.88)**	-0.18 (0.84)	0.04 (1.04) 0.05 (1.05)	0.82 (2.27) 0.67 (1.95)
Bradburn's Pos. Affect (<i>PA</i>)	1.22 (3.38)** 1.33 (3.77)**	0.06 (1.06)	-0.15 (0.86)	-0.04 (0.96) -0.06 (0.94)	-0.11 (0.90) 0.10 (1.10)
Pos. Affect Schedule (<i>PAS</i>)	0.86 (2.35)* 0.83 (2.29)	-0.02 (0.98)	0.03 (1.03)	0.13 (1.14)** 0.14 (1.15)**	0.15 (1.16) 0.08 (1.08)
Neg. Affect Schedule (<i>NAS</i>)	-0.87 (0.42)* -1.06 (0.35)**	0.01 (1.01)	0.29 (1.34)*	-0.07 (0.93) -0.06 (0.94)	-0.17 (0.84) -0.26 (0.77)
<i>Highest/Lowest Happiness</i>					
Highest Happiness (<i>HH</i>)	1.22 (3.40)** 1.39 (4.02)**	0.13 (1.14)**	-0.22 (0.81)	0.10 (1.10)* 0.05 (1.05)	0.08 (1.09) 0.48 (1.62)
Lowest Happiness (<i>LH</i>)	-0.04 (0.96) -0.06 (0.94)	0.02 (1.02)	0.12 (1.13)	0.05 (1.05) 0.06 (1.06)	-0.19 (0.82) -0.22 (0.80)
<i>Short-run Happiness/Affect</i>					
Now Happiness (<i>NH</i>)	-0.22 (0.80) -0.23 (0.79)	-0.04 (0.96)	-0.07 (0.93)	0.05 (1.05) 0.05 (1.05)	-0.01 (0.99) -0.09 (0.91)
Change Mood Index (<i>MID</i>)	0.32 (1.38) 0.21 (1.24)	-0.08 (0.92)*	0.21 (1.23)	-0.06 (0.94) -0.04 (0.96)	-0.13 (0.88) -0.37 (0.69)
<i>Life Satisfaction</i>					
Satisfaction with Life (<i>SWL</i>)	0.21 (1.23) 0.13 (1.14)	-0.02 (0.98)	0.13 (1.14)	0.19 (1.21)** 0.20 (1.22)**	-0.56 (0.57) -0.67 (0.51)
<u>Psychological Well-Being</u>					
Psych. WB Index (<i>PWBI</i>)	1.57 (4.80)** 1.61 (5.02)**	0.02 (1.02)	-0.14 (0.87)	0.17 (1.19)** 0.16 (1.17)**	0.22 (1.24) 0.36 (1.44)
Self-Actualiz. Index (<i>SAI</i>)	1.46 (4.32)** 1.54 (4.66)**	-0.07 (0.93)	-0.22 (0.80)	0.13 (1.14)** 0.13 (1.14)**	0.91 (2.49)* 0.87 (2.39)*

Notes: */** indicates significance at the 10/5% level; values in parentheses refer to odds ratios; n=48.

regressions yielded similar effects in terms of sign, although the best fit was associated with the Giver dummy. That is, the size of the gift did not matter for these well-being measures. We report, therefore, only the results using the Giver dummy, which are also considerably easier to interpret (this also validates the distinction made on Table 3 between Givers and Nongivers). Table 4 presents a summary of the regression results. The dependent well-being variables are noted in the first column and the Giver dummy in the second. Separate regressions are reported for each of the two MWB measures: expenditures in thousands of dollars and parents' income. The Marlowe-Crowne scale is included to control for a response bias, and, finally, the recruitment dummy

equals 1 if the subject was recruited from a class explicitly for money and 0 if the subject originally signed up to fulfill a class requirement.

Let us begin with a simple example of how these results can be interpreted. The second row for Highest Happiness presents the findings for the regression of this variable on parents' income, the MC scale and the recruitment dummy. In the Giver column, the first value of 1.39 is the coefficient from the ordered logit. The positive value indicates that being a Giver is associated with greater peak happiness, but it is not a convenient statistic for interpreting the magnitude of this effect. A somewhat better number for this purpose is the odds ratio, which is the second value in parentheses. The odds ratio of 4.02 for the Giver dummy means that the predicted odds of a Giver achieving highest happiness are about four times those for Nongivers. That is, if the odds of a particular Nongiver having peak happiness are 1, then the odds of an equivalent Giver (one with the same parents' income, MC score and recruitment method) achieving this are about 4. Or, if a particular Nongiver's odds of highest happiness are 1/2, an equivalent Giver's odds are about 2. This holds irrespective of the values of the right-hand side variables or of the break-off point for defining highest happiness. These factors affect the odds but not the odds ratio between Givers and Nongivers. This result is significant at the 5% level.

The remaining explanatory variables are not significant, but it is helpful to review how to interpret them. The coefficient of -0.22 on parents' income indicates that this is inversely related to highest happiness. Just as a positive coefficient corresponds to an odds ratio greater than 1, a negative coefficient corresponds to an odds ratio of less than 1. The odds ratio indicates the effect of a one-unit change, so a value of 0.81 means that a one point increase in parents' income (about \$25,000) reduces the odds of highest happiness by 0.81 or, put differently, increases the odds of forgoing highest happiness by 23% (from the inverse 1/0.81). The odds ratio of 1.05 for the MC scale suggests that a one point increase in the 33-point MC scale results in a 5% increase in the odds of reported (in this case, overreported) peak happiness, and the odds ratio on the recruitment dummy means subjects recruited from classes for money have greater odds of highest happiness.

Reviewing the results on this table as a whole, we see that they largely corroborate what the

summary statistics show. Giving is not significantly related to short run happiness or affect, lowest happiness and life satisfaction. The significant results on subjective and psychological well-being are correlated in the same way. Highest happiness and the two psychological well-being measures continue to be highly significant. Givers have about 3 to 4 times greater odds of highest happiness and 4 to 5 times greater odds of psychological well-being. Some of the measures of long run happiness, though, slip in significance somewhat, depending mostly on the specification for MWB. Relative to Nongivers, Givers have approximately 2 to 4 times greater odds of overall happiness and positive affect and about 40% the odds of negative affect. Only four of the 22 MWB coefficients are significant (two marginally), and three of these suggest an unfavorable effect of MWB on SWB.²⁷ Finally, controlling for other variables, only four of the well-being measures (*PAS*, *SWL*, *PWBI* and *SAI*) are significantly related to the MC scale, whereas *NAS*, *NH*, *HH* and *LH*, which were significant using simple correlation coefficients, are no longer significant. The recruitment dummy is insignificant, except for marginally significant case of *SAI*, suggesting recruitment method was not important for this experiment.

4.2. Analysis of Hypotheses

The results presented above establish that generosity is favorably correlated with certain measures of well-being in this experiment. We now consider each of the four hypotheses, outlined in the previous section, about possible causes for these correlations.

Generosity Hypothesis: According to this, people give in order to feel better, in which case one would expect Givers to experience, on average, a more favorable mood change, or *MID* score. As indicated in Table 3, however, the 0.67 mean mood improvement of Givers is not significantly greater than the 0.51 value for Nongivers ($p=0.323$), and this is further substantiated with the ordered logit results reported in Table 4. Nevertheless, this could be due to self-selection: some,

²⁷ Even for the one positive and significant finding, an interpretation of the coefficients implies a minor role for MWB relative to giving: the boost in highest happiness from being a Giver is equivalent to having approximately \$9500 of additional expenditures over the school year. This is striking since being a Giver is associated with giving as little as one dollar, and on average \$3.72, whereas \$9500 is 1.75 standard deviations from the mean expenditures of \$26,960.

who are made happier by giving, do so, whereas others, who are made happier by not giving, do not.²⁸ For this reason, we also consider the *MID* scores of Room A subjects in the Control group, who had no opportunity to share their \$10 endowment. Room A subjects in the Dictator treatment should experience, on average, a bigger boost in mood than their counterparts in the Control since subjects who are made happier by giving should register a larger improvement in mood in the former versus the latter treatment (and subjects whose happiness is not improved by giving should be unaffected by the difference in treatments). Table 5 summarizes the mean *MID* values for Rooms A and B in both the Dictator and Control treatments. The mood change reported by Room A subjects in the Dictator treatment (0.60) is not significantly greater ($p=0.947$) than the Control (1.02), in fact, the Control *MID* is larger. Even if one takes just the Givers in the Dictator treatment, who presumably benefit from giving, their mean *MID* of 0.67 is not greater than that in the Room A Control ($p=0.887$), as indicated in the last line of the table. Using gift in dollars as an independent variable in ordered logit regressions similarly produces no significant results. Thus, we find no evidence that generosity *directly* causes happiness.

Table 5. Mean Mood Change (*MID*)

Room		Treatment		H ₀ : Dictator>Control (<i>p</i> -value)
		Dictator	Control	
Room A	<i>MID</i>	0.60	1.02	0.947
	n	48	45	
Room B	<i>MID</i>	-0.94	-1.16	0.238
	n	48	45	
H ₀ : Room A>Room B (<i>p</i> -value)		0.001	0.001	
Using Givers only in Dictator Treatment:				
Room A	<i>MID</i>	0.67	1.02	0.887
	n	29	45	

Happiness Hypothesis: This hypothesis reverses the causality from the previous one and proposes that happiness causes generosity. Specifically, subjects who enjoy greater happiness (*NH*) or a better mood (*MII*) just prior to the allocation decision are hypothesized to be more generous. Table 6 summarizes the results on dictator generosity as they pertain to this and the

²⁸ We are indebted to George Loewenstein for first pointing out to us the need to state this point explicitly.

other two remaining hypotheses. As one test of the happiness hypothesis, for example, subjects are split at the median value for *NH*. The first column shows the mean gifts of those with high *NH* (\$2.07) and low *NH* (\$2.53), respectively, and the *p*-value of 0.58 from a one-tail *t*-test of the null hypothesis that high *NH* subjects are more generous than low *NH* subjects. Thus, high *NH* subjects actually give less than low *NH* subjects, but this difference is not significant. Although the happiness hypothesis was only formulated with respect to gift size, it is interesting to see whether the decision to give is related to pre-allocation happiness. The second column indicates that 62.1% of high *NH* subjects gave something as opposed to 57.9% of low *NH* subjects, again an insignificant difference. Using *MII* as a measure of mood, we also fail to find any evidence in support of the happiness hypothesis, in fact, both the gift size and the decision to give are insignificantly opposite expectations for them. Multivariate analysis leads to similar results. In OLS regressions of the Gift on *NH* or *MII*, Expenditures or Parents' income, and the Recruitment dummy, we find no statistically significant relationships. In binary logit regressions in which the dependent variable is {1,0}={Giver, Nongiver}, none of the coefficients on *NH*, *MII*, Expenditures, Parents' income or the Recruitment dummy is significant at conventional levels. Thus, we find no evidence that happiness causes generosity.

**Table 6. Dictator Generosity
(Mean Gifts, % of Givers)**

	Happiness Hypothesis				Material Well-Being Hyp				Psych Well-Being Hyp			
	<i>NH</i>		<i>MII</i>		Expend		Parents' Inc		<i>PWBI</i>		<i>SAI</i>	
	Gift (\$)	Givers (%)	Gift (\$)	Givers (%)	Gift (\$)	Givers (%)	Gift (\$)	Givers (%)	Gift (\$)	Givers (%)	Gift (\$)	Givers (%)
High	2.07	62.1	1.96	58.3	1.93	60.7	2.25	56.2	2.42	79.2	2.42	73.1
Low	2.53	57.9	2.54	62.5	2.70	60.0	2.25	68.7	2.08	41.7	2.05	45.4
<i>p</i> -value	0.71	0.39	0.76	0.88	0.82	0.48	0.50	0.80	0.34	0.01	0.32	0.03

Notes: For each variable (e.g., *NH*), dictators are split into those who score at or above the median in terms of that variable (High) and those who are below the median of that variable (Low). The Gift columns indicate the mean gifts for each group as well as the *p*-value for a one-tail *t*-test of the null hypothesis that the Gift of the High group is greater than that of the Low group. The Giver columns show the proportion of givers for each group and the *p*-value for a one-tail *z*-test of the hypothesis that the fraction of Givers in the High group exceed that in the Low group. Results that pertain to the specific predictions of each hypothesis are indicated in boxes, and significant results are in bold type.

Material Well-Being Hypothesis: Is material well-being the tertiary causal factor of both generosity and happiness? First, on the MWB-generosity relation, the middle rubric of Table 6 shows no support that subjects with high expenditures or parents' income give any more in dollar terms or are any more likely to give. Similarly, OLS regressions of dictator Gifts on either measure of MWB, both with and without the Recruitment dummy, yield no significant results. The same is true of binary logit regressions of the Giver variable on these explanatory variables.

Table 7. Results on Hedonic Happiness and Material Well-Being

<u>MWB Measure</u>		<u>Mean Scores</u>					<u><i>n</i></u>
		<u><i>OH</i></u>	<u><i>PA</i></u>	<u><i>PAS</i></u>	<u><i>NAS</i></u>	<u><i>SWL</i></u>	
Expenditures	High	6.50	4.25	38.3	22.0	23.2	28
	Low	6.75	3.80	37.8	23.4	25.6	20
	<i>p</i> -value	0.77	0.09	0.38	0.25	0.92	
Parents' income	High	6.44	4.00	37.9	23.3	24.2	32
	Low	6.94	4.19	38.6	21.0	24.2	16
	<i>p</i> -value	0.93	0.70	0.68	0.86	0.49	

Notes: Dictators are split into those who score at or above the median MWB and those who are below it. Each column indicates the mean SWB for each group and the *p*-value for a one-tail *t*-test of the null hypothesis that High group is better than the Low group in terms of hedonic happiness.

Regarding the MWB-happiness relation, there is no initial support from any of the 28 correlation coefficients on Table 2. Analogous to Table 6, Table 7 splits subjects at the median for each of the two measures of MWB and reports mean values of the relevant hedonic happiness measures (*OH*, *PA*, *PAS*, *NAS* and *SWL*) separately for High and Low MWB subjects. None of the predictions of this hypothesis for SWB is significant at conventional levels. There is weakly significant evidence that expenditures increase *PA* but also that parents' income decreases *OH* (opposite the hypothesis). Regression analysis comes to similar conclusions. As previously discussed, only one of the 18 MWB odds ratios for the ordered logit regressions reported on Table 4 indicates a significant favorable impact on SWB, and three suggest the opposite effect.²⁹ Thus,

²⁹ Although the happiness hypothesis is formulated with respect to *long run* hedonic happiness, the pattern of mood changes displayed on Table 5 might be seen as consistent with this hypothesis for *short run* happiness: Room A subjects, whose payments are usually larger than those of Room B subjects, also experience significantly greater mood improvements. Nevertheless, only Room A subjects know their actual payments at the time they complete the second mood index, so Room B mood change is based on expectations of payment, or perhaps on something

the evidence does not favor MWB as the factor that causes generosity or happiness.

Psychological Well-Being Hypothesis: We have seen from a comparison of means (Table 3) and ordered logit regressions (Table 4) that Givers are more likely to be psychologically healthy and self-actualizing. In fact, these are the quantitatively largest and statistically most significant results between giving and well-being from the ordered logit analysis. The claim advanced by this hypothesis, however, is that those higher in PWB are more likely to be Givers and will have more favorable overall happiness, peak happiness and affect. On the first question of PWB and generosity, the right hand rubric of Table 6 is affirmative. Whereas 79.2% of High *PWBI* subjects give some positive amount, only 41.7% of Low *PWBI* subjects do so. Similarly, 73.1% of High *SAI* subjects decide to give, but only 45.4% of Low *SAI* subjects. Both of these results are statistically significant. Although this hypothesis does not state whether high PWB subjects will give more in dollar terms, it turns out that they do, although these differences are not significant. The Giver-PWB relation is also corroborated by the multivariate analysis reported in Table 9. The first two rows of the top rubric summarize logit regressions of the Giver dummy on *PWBI*, the two MWB measures (separately) and the recruitment dummy. These indicate that a one point increase in the 31 point *PWBI* scale is associated with a significant 23%-26% increase in the odds of giving. Similarly, the first two rows of the bottom rubric presents the results of the analogous regression on *SAI* and indicate that a one point increase on the 46 point *SAI* scale significantly increases the odds of giving by between 14% and 16%.

On the PWB-SWB relation, Table 8 presents results in a format analogous to Tables 6 and 7. Those high in PWB register more favorably on all relevant SWB measures, and all but one of these differences is significant. Multivariate ordered logit regressions summarized in Table 9 come to almost identical conclusions: both PWB measures indicate a favorable effect on all the targeted SWB measures, and the significance levels are also the same as in Table 8, save the

altogether different such as the asymmetric power relation. In the absence of any significant correlation between payment amount and mood change for Room A subjects, the latter seems the more plausible explanation for the Room B mood change.

Table 8. Results on Subjective and Psychological Well-Being

<u>PWB Measure</u>		Mean Scores					<u>n</u>
		<u>OH</u>	<u>PA</u>	<u>PAS</u>	<u>NAS</u>	<u>HH</u>	
Psych. WB Index (<i>PWBI</i>)	High	6.96	4.35	39.8	19.2	8.13	24
	Low	6.25	3.75	36.3	25.9	7.38	24
	<i>p</i> -value	0.01	0.04	0.01	0.01	0.01	
Self-Actual. Index (<i>SAI</i>)	High	7.08	4.42	40.0	20.5	7.92	26
	Low	6.05	3.64	35.8	25.0	7.55	22
	<i>p</i> -value	0.01	0.01	0.01	0.01	0.12	

Notes: Dictators are split into those who score at or above the median PWB and those who are below it. Each column indicates the mean SWB for each group and the *p*-value for a one-tail *t*-test of the null hypothesis that High group is better than the Low group in terms of SWB. Significant results are in bold type.

**Table 9. Summary of Logit Regressions on Psychological Well-Being
Coefficients (Odds ratios)**

<u>Dependent variable</u>	<u>PWB Measure</u>	<u>Material well-being</u>		<u>Marlowe-Crowne scale</u>	<u>Recruitment dummy</u>
		<u>Expenditures (\$1000)</u>	<u>Parents' Income</u>		
<i>PWB Measure: Psych. WB Index</i>					
Giver dummy		0.21 (1.23)**	0.04 (1.04)		-0.38 (0.68)
		0.23 (1.26)**		0.22 (1.25)	-0.39 (0.68)
Overall Happiness (<i>OH</i>)		0.39 (1.48)**	-0.15 (0.86)**	-0.06 (0.94)	0.85 (2.35)
		0.33 (1.39)**		-0.07 (0.93)	0.59 (1.80)
Bradburn's Pos. Affect (<i>PA</i>)		0.27 (1.31)**	0.06 (1.06)	-0.11 (0.90)*	-0.29 (0.75)
		0.28 (1.32)**		-0.03 (0.97)	-0.13 (0.88)
Pos. Affect Schedule (<i>PAS</i>)		0.29 (1.33)**	-0.03 (0.97)	0.06 (1.06)	0.23 (1.26)
		0.28 (1.32)**		0.07 (1.07)	0.10 (1.11)
Neg. Affect Schedule (<i>NAS</i>)		-0.29 (0.75)**	0.04 (1.04)	-0.00 (1.00)	-0.18 (0.84)
		-0.28 (0.76)**		0.23 (1.26)	-0.23 (0.79)
Highest Happiness (<i>HH</i>)		0.27 (1.31)**	0.13 (1.13)**	0.03 (1.03)	0.13 (1.14)
		0.27 (1.31)**		-0.10 (0.91)	-0.01 (0.99)
<i>PWB Measure: Self-Actual. Index</i>					
Giver dummy		0.15 (1.16)**	0.08 (1.09)		-0.73 (0.48)
		0.13 (1.14)**		0.16 (1.18)	-0.54 (0.58)
Overall Happiness (<i>OH</i>)		0.16 (1.18)**	-0.10 (0.90)*	-0.03 (0.97)	0.39 (1.47)
		0.18 (1.19)**		-0.07 (0.93)	0.17 (1.19)
Bradburn's Pos. Affect (<i>PA</i>)		0.23 (1.26)**	0.14 (1.16)**	-0.11 (0.90)*	-0.95 (0.39)
		0.17 (1.19)**		-0.07 (0.93)	-0.41 (0.66)
Pos. Affect Schedule (<i>PAS</i>)		0.21 (1.24)**	0.04 (1.05)	0.09 (1.10)*	-0.54 (0.58)
		0.21 (1.23)**		0.17 (1.19)	0.10 (1.10)*
Neg. Affect Schedule (<i>NAS</i>)		-0.09 (0.92)*	-0.00 (1.00)	-0.04 (0.96)	-0.02 (0.98)
		-0.08 (0.92)		0.22 (1.25)	-0.03 (0.98)
Highest Happiness (<i>HH</i>)		0.06 (1.06)	0.15 (1.16)**	0.07 (1.08)	-0.09 (0.92)
		0.02 (1.02)		-0.14 (0.87)	0.31 (1.37)

Notes: */** indicates significance at the 10/5% level; n=48.

effect of *SAI* on *NAS*, which slips to borderline significance (with p -values of .09 to .11). More generally, the signs of the coefficients on the PWB measures are as predicted for all 24 regressions in Table 9, and of the four regressions for each of the dependent variables, all four are significant for Giver, *OH*, *PA* and *PAS*, and two of four are significant for *NAS* and *HH*.

Thus, the PWB-Giver and PWB-SWB relations are consistent with the psychological well-being hypothesis and prove to be very robust with respect to alternate specifications of PWB, SWB, MWB and method of analysis, as seen in Tables 6, 8 and 9. Even the weaker significance of some measures of the SWB-Giver relation in Table 4 is supportive: the PWB hypothesis states that the only direct relations are PWB-Giver and PWB-SWB, both of which are presumably subject to independent error, a fact that would weaken the indirect SWB-Giver relation.

Nevertheless, an alternative explanation for the PWB-Giver-SWB relationship is that *long-run* SWB (in this study, *OH*, *PA*, *PAS* and *NAS*) causes both giving and PWB, a conjecture we will call the Subjective Well-Being (or SWB) Hypothesis (note that the Happiness Hypothesis posited only an effect of *short-run* SWB on giving).³⁰ The aforementioned weakness of the SWB-Giver relation counts against this, but a more formal test is also possible. If the PWB Hypothesis is correct, all of the covariance between long-run SWB variables and giving operates through PWB. Thus, if we regress long-run SWB on PWB, adding the Giver dummy to these regressions should not improve the explanatory power of the regression, or the *goodness-of-fit*, but adding the Giver dummy to regressions of PWB on SWB should improve the goodness-of-fit. If, on the other hand, the SWB Hypothesis is correct, these predictions are reversed: adding the Giver dummy to regressions of SWB on PWB should significantly improve goodness-of-fit, whereas it will have no effect on goodness-of-fit for regressions of PWB on SWB.

Table 10 presents the results for the likelihood ratio test that adding the Giver dummy significantly increases the goodness-of-fit measure for these ordered logit regressions. The first rubric presents the likelihood ratios and p -values for regressions of the SWB variables on the

³⁰ We wish to thank a referee for suggesting that we test this alternative hypothesis.

PWB variables, the MC scale, the Recruitment dummy and Expenditures, as the MWB variable in columns 3 and 4, or, alternately, Parents' income as the MWB variable in columns 5 and 6. These tests demonstrate that adding the Giver dummy does not increase goodness-of-fit in any of the sixteen regressions at conventional levels of significance (indeed, only one is borderline significant even at the 10 percent level). Thus, these results support the PWB Hypothesis over the SWB Hypothesis. The second rubric is analogous but presents the statistics for regressions of the PWB variables on the SWB and other variables. Adding the Giver dummy to these regressions increases goodness of fit at the 5% level of significance for 14 of the 16 cases, and even the two remaining cases (with PA as an independent variable) only barely miss significance at this level. Thus, the results from these regressions and the previous ones are highly supportive of the PWB Hypothesis over the SWB Hypothesis.

**Table 10. Goodness-of-Fit Tests
for the Addition of the Giver Dummy**

<u>Dependent variable</u>	<u>Indep. var.</u>	<u>Expenditures</u>		<u>Parents' Income</u>	
		<u>LR</u>	<u>p-value</u>	<u>LR</u>	<u>p-value</u>
Overall Happiness (<i>OH</i>)	<i>PWBI</i>	0.34	0.56	0.08	0.77
	<i>SAI</i>	0.52	0.47	0.27	0.60
Bradburn's Pos. Affect (<i>PA</i>)	<i>PWBI</i>	1.55	0.21	1.71	0.19
	<i>SAI</i>	1.48	0.22	2.81	0.09
Pos. Affect Schedule (<i>PAS</i>)	<i>PWBI</i>	0.22	0.64	0.18	0.67
	<i>SAI</i>	0.10	0.75	0.13	0.71
Neg. Affect Schedule (<i>NAS</i>)	<i>PWBI</i>	0.10	0.75	0.31	0.58
	<i>SAI</i>	1.30	0.25	2.24	0.13
Psych. WB Index (<i>PWBI</i>)	<i>OH</i>	4.89	0.03	5.87	0.02
	<i>PA</i>	4.81	0.03	5.01	0.03
	<i>PAS</i>	6.12	0.01	6.45	0.01
	<i>NAS</i>	4.62	0.03	4.55	0.03
Self-Actual. Index (<i>SAI</i>)	<i>OH</i>	4.52	0.03	4.82	0.03
	<i>PA</i>	3.51	0.06	3.81	0.05
	<i>PAS</i>	4.97	0.03	5.11	0.02
	<i>NAS</i>	5.74	0.02	6.32	0.01

Notes: LR denotes the likelihood ratio. These ordered logit regressions also include the Marlowe-Crowne scale and the Recruitment dummy as independent variables.

5. Conclusions

Numerous careful investigations (e.g., Blanchflower and Oswald, 2004, Easterlin, 2001,

McBride, 2001) have established that income growth leads to little or no increase in aggregate happiness. More generally, this is consistent with the “hedonic treadmill,” the theory that, because of adaptation, attempts to increase happiness are for naught, rather like the myth of Sisyphus, who was condemned to roll a huge stone to the top of a hill, only to have it roll back down, and ceaselessly to repeat this futile exercise.³¹ Many in the recent positive psychology movement, on the other hand, claim to identify factors that improve subjective well-being in the long run. The current study is informed by and seeks to reconcile both types of findings. Specifically, it appears that the pursuit of happiness can, indeed, be likened to a Sisyphusean task with its endless challenges that result in fluctuations around a relatively stable steady state. Nevertheless, the crucial point is that *it matters which stone one rolls up the hill*: some tasks, such as helping others, appear capable of sustaining happiness at a higher average level than other goals, like the pursuit of material wealth.

This study presents evidence indicating that happiness and intrinsic generosity are favorably related and that psychological well-being is the causal factor. This builds on other recent evidence that altruistic behavior contributes in the long run to subjective well-being (Boehm and Lyubomirsky, 2006, Meier and Stutzer, 2007, and Switzer et al., 1995) and psychological well-being (Sheldon and Lyubomirsky, 2006, and Thoits and Hewitt, 2001). Together such findings suggest that greater attention should be paid to the benefits of policies that promote charitable behavior, volunteerism, service education, community activities, political involvement, and social policies and institutions that foster psychological well-being. Nevertheless, the hedonistic paradox, which these results support, is also a caveat: “pleasure to be got must be forgot.” Although he never faltered in his belief in happiness as an end, John Stuart Mill cautioned that it could not be attained by making it such:

Those only are happy, I thought, who have their minds fixed on some object other than their own happiness, on the happiness of others, on the improvement of mankind, even on some art or pursuit, followed not as a means, but as itself an ideal end. Aiming thus at something else, they find happiness by

³¹ We are indebted to Claudia Senik for this metaphor, which she introduced at the recent Conference on the Economics of Happiness.

the way. [Mill, 1893, pg. 117]

By this view, findings such as those presented in this study should not be oversimplified and taken, for example, to imply benefits from generosity that is consciously pursued as a means to increase one's own happiness. Rather, any policies informed by such research must be carefully crafted and implemented in light of the gradual and long run benefits of altruistic behavior on psychological, and consequently, subjective well-being.

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