finely regulated by correlated activities in a neuronal network and may consolidate nearby stimulated synapses by autocrine or paracrine mechanisms. BDNF action was selective on the spines that showed immediate enlargement, which may act as the structural tag for selective trapping (*26*) of the protein-synthetic machinery (*11*, *27*) and the capture of plasticity proteins (*2*, *28*) for long-term spine-head enlargement. Thus, BDNF acts as an associative messenger for the consolidation of synaptic plasticity, and the protein-synthetic process can regulate dendritic structures at the level of single spines.

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Spending Money on Others Promotes Happiness

Elizabeth W. Dunn,[1]* Lara B. Aknin,[1] Michael I. Norton[2]

Although much research has examined the effect of income on happiness, we suggest that how people spend their money may be at least as important as how much money they earn. Specifically, we hypothesized that spending money on other people may have a more positive impact on happiness than spending money on oneself. Providing converging evidence for this hypothesis, we found that spending more of one's income on others predicted greater happiness both cross-sectionally (in a nationally representative survey study) and longitudinally (in a field study of windfall spending). Finally, participants who were randomly assigned to spend money on others experienced greater happiness than those assigned to spend money on themselves.

Can money buy happiness? A large body of cross-sectional survey research has demonstrated that income has a reliable, but surprisingly weak, effect on happiness within nations (*1*–*3*), particularly once basic needs are met (*4*). Indeed, although real incomes have surged dramatically in recent decades, happiness levels have remained largely flat within developed countries across time (*5*). One of the most intriguing explanations for this counterintuitive finding is that people often pour their increased wealth into pursuits that provide little in the way of lasting happiness, such as purchasing costly consumer goods (*6*). An emerging challenge, then, is to identify whether and how disposable income might be used to increase happiness.

Ironically, the potential for money to increase happiness may be subverted by the kinds of choices that thinking about money promotes; the mere thought of having money makes people less likely to help acquaintances, to donate to charity, or to choose to spend time with others (*7*), precisely the kinds of behaviors that are strongly associated with happiness (*8*–*12*). At the same time, although thinking about money may drive people away from prosocial behavior, money can also provide a powerful vehicle for accomplishing such prosocial goals. We suggest that using money in this fashion—investing income in others rather than oneself—may have measurable benefits for one's own happiness.

As an initial test of the relation between spending choices and happiness, we asked a nationally representative sample of 632 Americans (55% female) to rate their general happiness, to report their annual income, and to estimate how much they spent in a typical month on (i) bills and expenses, (ii) gifts for themselves, (iii) gifts for others, and (iv) donations to charity (*13*). The first two categories were summed to create an index of personal spending [mean (M) = \$1713.91, SD = 1895.65], and the latter two categories were summed to create an index of prosocial spending (M = \$145.96, SD = 306.06). Entering the personal and prosocial spending indices simultaneously into a regression predicting general happiness revealed that personal spending was unrelated to happiness (standardized regression coefficient $\beta = -0.02$, NS), but higher prosocial spending was associated with significantly greater happiness ($\beta = 0.11$, $P < 0.01$). When we included income in this regression, we found that the effects of income ($\beta = 0.11$, $P < 0.01$) and prosocial spending ($\beta = 0.10$, $P < 0.03$) were independent and similar in magnitude, whereas personal spending remained unrelated to happiness ($\beta = -0.04$, NS). Although the correlational nature of this design precludes causal inferences, this study provides initial evidence that how people spend their money may be as important for their happiness as how much money they earn—and that spending money on others might represent a more effective route to happiness than spending money on oneself (*13*).

If this interpretation is correct, then people who receive an economic windfall should experience greater happiness after receiving the windfall if they spend it on others rather than themselves, even controlling for happiness before the windfall. We tested this prediction by examining the happiness of 16 employees before and after they received a profit-sharing bonus from their company (*13*). One month before receiving this bonus (M = \$4918.64, SD = 1816.98), the employees reported their general happiness as well as their annual income. Approximately 6 to 8 weeks after receiving the bonus, participants again reported their general happiness and then reported what percentage of their bonus they had spent on (i) bills and expenses, (ii) rent or mortgage, (iii) buying something for themselves, (iv) buying something for someone else, (v) donating to charity, and (vi) other. The first three categories were summed to create an index of personal spending

[1]Department of Psychology, 2136 West Mall, the University of British Columbia, Vancouver, BC V6T 1Z4, Canada. [2]Marketing Unit, 189 Morgan Hall, Harvard Business School, Soldiers Field Road, Boston, MA 02163, USA.

*To whom correspondence should be addressed. E-mail: edunn@psych.ubc.ca

(M = 63.44, SD = 38.20), and the fourth and fifth categories were summed to create an index of prosocial spending (M = 12.19, SD = 18.35).

Entering Time 1 happiness and our two spending indices into a regression predicting Time 2 happiness revealed that prosocial spending was the only significant predictor of happiness at Time 2 (β = 0.81, $P < 0.02$). With income included as an additional predictor in this regression (β = –0.03, NS), the effect of prosocial spending remained significant (β = 0.96, $P < 0.02$). Similarly, the prosocial spending effect was significant (β = 0.81, $P < 0.03$) when controlling for bonus amount (β = 0.00, NS). Thus, employees who devoted more of their bonus to prosocial spending experienced greater happiness after receiving the bonus, and the manner in which they spent that bonus was a more important predictor of their happiness than the size of the bonus itself (*13*).

Building on our correlational and longitudinal evidence that spending on others may promote happiness, we next demonstrated the causal impact of prosocial spending, using experimental methodology (*13*). Participants (N = 46) rated their happiness in the morning and then were given an envelope that contained either $5 or $20, which they were asked to spend by 5:00 p.m. that day. Participants randomly assigned to the personal spending condition were instructed to spend the money on a bill, an expense, or a gift for themselves, whereas participants assigned to the prosocial spending condition were instructed to spend the money on a gift for someone else or charitable donation. Participants were called after 5:00 p.m. that day and again reported their happiness. We submitted postwindfall happiness to a 2 (windfall size: $5 versus $20) × 2 (spending direction: personal versus prosocial) between-subjects analysis of covariance (ANCOVA), with prewindfall happiness included as a covariate. This analysis revealed a significant main effect of spending instructions [$F_{1,41}$ = 4.39, $P < 0.04$, effect size estimate (η_p^2) = 0.10], whereby participants in the prosocial spending condition (M = 0.18, SD = 0.62) reported greater postwindfall happiness than did participants in the personal spending condition (M = –0.19, SD = 0.66). Neither the main effect of windfall size ($F_{1,41}$ = 0.09, NS) nor the Windfall Size × Spending Direction interaction ($F_{1,41}$ = 0.12, NS) approached significance. These experimental results provide direct support for our causal argument that spending money on others promotes happiness more than spending money on oneself.

In moving away from the traditional focus on income toward an examination of spending choices, our perspective dovetails with recent theorizing by Lyubomirsky, Sheldon, and Schkade (*8*) on the architecture of sustainable changes in happiness. According to Lyubomirsky *et al*. (*8*), the historical focus on life circumstances (e.g., income, gender, and religious affiliation) as predictors of happiness may be somewhat misplaced; because people readily adapt to the stable circumstances of their lives, circumstantial factors tend to have rather limited long-term effects on happiness levels. Thus, intentional activities—practices in which people actively and effortfully choose to engage—may represent a more promising route to lasting happiness. Supporting this premise, our work demonstrates that how people choose to spend their money is at least as important as how much money they make.

Finally, despite the observable benefits of prosocial spending, our participants spent relatively little of their income on prosocial ends; participants in our national survey, for example, reported devoting more than 10 times as much money for personal as for prosocial spending each month. Although personal spending is of necessity likely to exceed prosocial spending for most North Americans, our findings suggest that very minor alterations in spending allocations—as little as $5 in our final study—may be sufficient to produce nontrivial gains in happiness on a given day. Why, then, don't people make these small changes? When we provided descriptions of the four experimental conditions from our final study to a new set of students at the same university (N = 109) and asked them to select the condition that would make them happiest, Fisher's Exact Tests revealed that participants were doubly wrong about the impact of money on happiness; we found that a significant majority thought that personal spending (n = 69) would make them happier than prosocial spending (n = 40) ($P < 0.01$) and that $20 ($n$ = 94) would make them happier than $5 ($n$ = 15) ($P < 0.0005$). Given that people appear to overlook the benefits of prosocial spending, policy interventions that promote prosocial spending—encouraging people to invest income in others rather than in themselves—may be worthwhile in the service of translating increased national wealth into increased national happiness.

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