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How Can People Become Happier? A Systematic Review of Preregistered Experiments

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Abstract

Can happiness be reliably increased? Thousands of studies speak to this question. However, many of them were conducted during a period in which researchers commonly "*p*-hacked," creating uncertainty about how many discoveries might be false positives. To prevent *p*-hacking, happiness researchers increasingly preregister their studies, committing to analysis plans before analyzing data. We conducted a systematic literature search to identify preregistered experiments testing strategies for increasing happiness. We found surprisingly little support for many widely recommended strategies (e.g., performing random acts of kindness). However, our review suggests that other strategies—such as being more sociable—may reliably promote happiness. We also found strong evidence that governments and organizations can improve happiness by providing underprivileged individuals with financial support. We conclude that happiness research stands on the brink of an exciting new era, in which modern best practices will be applied to develop theoretically grounded strategies that can produce lasting gains in life satisfaction.

Contents

INTRODUCTION

Happiness is not the only goal in life, but for many people, it is the most important one (e.g., Benjamin et al. 2012). For example, in a recent survey, thousands of people across nine nations were asked whether they would prefer a happy life, a meaningful life, or a psychologically rich life, filled with novelty and variety (Oishi et al. 2020). In every nation, from India and Angola to the United States and Norway, the majority of people chose a happy life. This common quest for a happy life can potentially be guided by scientific studies examining the determinants of happiness. And over the past few decades, researchers across multiple fields have conducted tens of thousands of studies, yielding exciting insights about the potential for human happiness to be increased.

Unfortunately, however, there are reasons to question the robustness of many of these findings. The meteoric rise of happiness research happened to coincide with a period in which there were no systematic standards to prevent researchers from "*p*-hacking" (i.e., selectively reporting significant analyses; Nelson et al. 2018, Nuzzo 2014). For example, imagine that a researcher randomly assigned 40 participants to take nightly bubble baths (or not) and then to complete two measures of happiness at the end of the week. If they analyzed the data and then decided to run an additional 20 participants, control for gender, and combine their two measures into a single composite, they would have about a one in three chance of finding that bubble baths significantly ($p < 0.05$) increased happiness—even if, in reality, the baths produced no benefits for happiness whatsoever (Simmons et al. 2011).[1]

[1]For an interactive demonstration of how easily even minimal *p*-hacking can produce significant results, readers may visit **https://projects.fivethirtyeight.com/p-hacking/**.

WHY NOT CONDUCT A META-ANALYSIS OF THE ENTIRE LITERATURE?

Rather than focusing exclusively on preregistered experiments, we could have conducted a meta-analysis including all experiments on happiness. Researchers have traditionally turned to meta-analyses to establish reliable effect sizes, gathering every relevant study—small or large, exploratory or confirmatory—and statistically averaging the results. The underlying assumption is that each study might be just a grain of sand, but together they can make a castle. This assumption, however, has turned out to be false (Simonsohn et al. 2022). By comparing meta-analyses to the gold standard of multisite preregistered replication studies, Kvarven et al. (2020) demonstrated that meta-analyses yielded effect size estimates that were nearly three times too large. One reason for this may be that meta-analysis compounds the problem of *p*-hacking (Simonsohn et al. 2022, Vosgerau et al. 2019). For example, if ten studies are each *p*-hacked even slightly (inflating the false positive rate from the standard threshold of 5% to just 8%), then combining these studies meta-analytically will produce a false positive 83% of the time. Thus, it appears that "meta-analysis is as strong as the weakest link" (Nelson et al. 2018, p. 528); in other words, if we build our castles out of sand, we should not be surprised when they wash away.

Startling simulations like this one helped to spur a paradigm shift in the field. Over the past decade, psychologists have begun openly sharing their data and materials, dramatically increasing their sample sizes, and putting more focus on replication of past work, producing a kind of renaissance for the field (Nelson et al. 2018). Perhaps most importantly, psychologists and other scientists are increasingly preregistering their studies, committing to written, time-stamped data analysis plans before analyzing their data (e.g., Nosek et al. 2018). Because preregistration substantially curtails researchers' ability to engage in *p*-hacking, preregistered studies restore the credibility of *p* values, arguably acting as the cure for *p*-hacking (Nelson et al. 2018, Nosek et al. 2018; but see Rubin & Donkin 2022 for a critique).

In the present article, we conducted a systematic search of the happiness literature to identify all preregistered experiments investigating ways to increase people's happiness (see the sidebar titled Why Not Conduct a Meta-Analysis of the Entire Literature?). Of course, correlational and longitudinal studies can also provide valuable clues about possible causal relationships (e.g., Diener et al. 2022). Experimental designs, however, are ultimately required to confirm them. Why limit our discussion to preregistered studies? Much like correlational research, exploratory research can help us discover potential causal relationships but cannot confirm them. Preregistration makes it uniquely possible to distinguish confirmatory results from exploratory ones. We believe happiness research has achieved a stage of maturity in which focusing on confirmatory experimental results is possible and worthwhile.

Of course, not every preregistered experiment offers high evidentiary value. As Vazire (2019) put it, "Transparency doesn't guarantee credibility; transparency and scrutiny together guarantee that research gets the credibility it deserves." In the pages that follow, we offer such scrutiny. We also note the number of participants in each condition because small sample sizes can undermine evidentiary value (e.g., Fraley & Vazire 2014). Indeed, approximately 50 participants per group are required just to show that men weigh more than women (Simmons et al. 2013). So, unless researchers are studying an effect that is larger than this gender difference in weight, studies with cell sizes below $n = 50$ should probably be viewed with skepticism.

Although the word "happiness" has been used in a variety of ways (see Sheldon 2016 for a review), we embrace Diener's (1984) long-standing definition of happiness as encompassing high life satisfaction, high positive affect, and low negative affect. Together, this happy trio is known as subjective well-being (SWB), a term we use interchangeably with happiness throughout this article.

SEARCH METHODS

Supplemental Material >

We conducted a systematic search of PsycInfo, Econlit, and Web of Science databases, with the final search conducted on April 5, 2023. We also reached out to researchers through Twitter, listservs, and email (see the **Supplemental Materials** for full details on the literature search). To identify preregistered experiments testing the effects of happiness interventions, we searched for studies that included at least one word related to happiness (e.g., "positive mood," "life satisfaction"), experimental design (e.g., "intervention," "experiment"), and preregistration (e.g., "preregistered," "analysis plan") anywhere in the abstract, keywords, or other metadata. We included studies of both healthy populations and patient populations, unless the study was testing an intervention specifically designed to treat a mental or physical health disorder (e.g., exposure therapy for social anxiety disorder). We also excluded studies focusing exclusively on children. As part of our search, we screened 5,953 papers, of which 251 were potentially relevant for inclusion. After a more detailed analysis, 48 of these papers, encompassing 65 individual studies, met our criteria. Some studies that initially appeared to meet our criteria, but upon careful review did not, are included in **Supplemental Table S2**.

OVERVIEW

We begin by discussing thinking styles and behaviors that individuals can add to their lives to become happier (see the section titled Addition), and then we consider how eliminating some of our everyday habits might promote happiness (see the section titled Subtraction). Finally, moving beyond a focus on what individuals can do for themselves, we review evidence examining how governments and organizations can promote happiness (see the section titled Beyond Individuals). In line with the scope of our review, all the studies we describe in detail are preregistered experiments (see **Table 1** for effect size estimates from these experiments).

ADDITION

Practicing Gratitude

To express gratitude for his morning coffee, the writer AJ Jacobs found joy in traveling the globe—from iron mines in Minnesota to coffee farms in Colombia—thanking everyone who made his cup of coffee possible (Jacobs 2018). Researchers theorize that experiencing gratitude causes a perspective shift in our lives as a whole, leading us to see our experiences and circumstances through a more positive lens (e.g., Emmons & McCullough 2003, Layous et al. 2014, Nelson-Coffey et al. 2023). According to broaden-and-build theory (Fredrickson 2004), this perspective shift creates an upward spiral of well-being. Thus, aside from being a positive emotion in its own right, gratitude may lead to long-term changes in mindsets that further increase well-being.

One online study provided evidence for the immediate benefits of gratitude but failed to find any long-term benefits (Nelson-Coffey et al. 2023). American parents wrote a single gratitude letter to someone in their lives ($n = 395$) or simply wrote about how they had spent their previous week ($n = 217$). There were no significant between-group differences in negative affect or subjective happiness, but parents who wrote a gratitude letter were in a significantly more positive mood immediately after the writing task relative to the control condition. Five days after the intervention, however, the two groups no longer differed in positive affect.

Using a slightly longer intervention, Walsh and colleagues (2023) assigned undergraduates to express gratitude on three different days, reporting their happiness the next day

Table 1 Effect sizes for the studies reviewed

Study	Effect size (Cohen's *d*)			
	Positive affect	Negative affect	Life satisfaction	Other (e.g., happiness, affect balance)
Addition				
Practicing gratitude				
Nelson-Coffey et al. (2023)	0.50	0.00	–	0.14 (happiness)
Walsh et al. (2023)	0.30	−0.07	0.34	–
Increasing sociability				
Kardas et al. (2022, study 5)	–	–	–	1.08 (enjoyment)
Jacques-Hamilton et al. (2019) (momentary measurement)	0.48	–	–	–
Schroeder et al. 2022	0.50	–	–	–
Acting happy				
Coles et al. (2022) (facial mimicry condition; smile versus neutral expression)	–	–	–	0.44 (happiness)
Coles et al. (2023, experiment 1) (negative expectancy condition)	–	–	–	0.22 (happiness)
Coles et al. (2023, experiment 2) (negative expectancy condition)	–	–	–	0.76 (happiness)
Coles et al. (2023, experiment 3) (negative expectancy condition)	–	–	–	0.40 (happiness)
Coles et al. (2023, experiment 5) (nonbelievers group)	–	–	–	0.30 (happiness)
Coles et al. (2023, experiment 6) (nonbelievers group)	–	–	–	0.16 (happiness)
Injecting novelty				
West et al. (2021, experiment 1)	0.31	−0.38	–	0.31 (general satisfaction)
West et al. (2021, experiment 2)	0.37	−0.27	–	0.35 (general satisfaction)
West et al. (2021, experiment 3)	0.14	−0.13	–	0.19 (general satisfaction)
O'Brien & Smith (2019, experiment 3b)	–	–	–	0.32 (enjoyment)
Looking on the bright side				
Rankin & Sweeny (2022, study 4)	0.13	−0.10	–	–
Keech et al. (2021)	0.07	0.11	0.35	–
Changing diet				
Conner et al. (2017) (receiving-fruit condition versus control)	0.12	−0.28	–	–
Practicing meditation				
Noone & Hogan (2018)	−0.11	−0.21	–	–
Schroter et al. (2023)	0.20	–	–	–

(*Continued*)

Table 1 (*Continued*)

Study	Effect size (Cohen's *d*)			
	Positive affect	Negative affect	Life satisfaction	Other (e.g., happiness, affect balance)
Helping others				
Aknin et al. (2020, experiment 1)	0.36 (affect) 0.32 (emotion)	–	–	–
Aknin et al. (2020, experiment 2)	0.03 (affect) 0.03 (emotion)	–	–	–
Aknin et al. (2020, experiment 3)	0.06 (affect) 0.06 (emotion)	–	–	–
Hannibal et al. (2019, experiment 4)	0.11	–	–	–
Martela & Ryan (2021, experiment 1)	0.14	0.32	–	–
Martela & Ryan (2021, experiment 2)	0.14	0.07	–	–
Martela & Ryan (2021, experiment 3)	0.32	0.11	–	–
Miles & Upenieks (2022, experiment 4)	0.30	–	–	–
O'Brien & Kassirer (2019, experiment 1)	–	–	–	0.46 (happiness)
O'Brien & Kassirer (2019, experiment 2)	0.27	–	–	–
Varma & Hu (2022, experiment 1)	1.27	−0.58	–	–
Varma & Hu (2022, experiment 2)	0.10	−0.33	–	–
Varma et al. (2023, experiment 1)	0.29	−0.49	–	0.06 (happiness)
Varma et al. (2023, experiment 2)	0.47	−0.08	–	0.49 (happiness)
White et al. (2022, experiment 1)	–	–	–	0.32 (happiness/life evaluation)
Kim et al. (2022)	0.02	–	–	
Whillans et al. (2017)	–	–	–	0.15 (subjective well-being composite)
Fritz et al. (2021)	0.09	−0.07	−0.06	–
Y. Archer Lee, Y.C. Guo & F.S. Chen (unpublished manuscript) (regular acts of kindness condition versus control condition)	0.07	0.11	0.35	–
Multicomponent interventions				
Hirshberg et al. (2022)	0.40	–	–	–
Heintzelman et al. (2020)	0.46	−0.56	0.30	–
Hobbs et al. (2022)	–	–	–	–
Subtraction				
Avoiding thinking about better futures				
O'Brien (2022, study 1)	–	–	–	0.23 (enjoyment)

(*Continued*)

Table 1 (*Continued*)

Study	Effect size (Cohen's *d*)			
	Positive affect	Negative affect	Life satisfaction	Other (e.g., happiness, affect balance)
O'Brien (2022, study 2)	–	–	–	0.24 (enjoyment)
O'Brien (2022, study 3)	–	–	–	0.26 (enjoyment)
Reducing unpleasant time use				
Whillans et al. (2017)	0.39	−0.44	–	–
Whillans & West (2022)	–	–	–	−0.09 (subjective well-being composite)
Reducing social media and smartphone use				
Dwyer et al. (2018, study 1)	–	–	–	0.29 (enjoyment) 0.13 (overall mood)
Kushlev & Dunn (2019)	–	–	–	−0.09 (overall mood)
Dwyer et al. (2023)	–	–	–	0.18 (enjoyment)
Kushlev et al. (2017, study 1)	–	–	–	−0.10 (overall mood)
Przybylski et al. (2021, study 1)	−0.03	0.12	–	−0.37 (day satisfaction)
Przybylski et al. (2021, study 2)	−0.02	−0.01	–	−0.11 (day satisfaction)
Przybylski et al. (2021, study 3)	−0.15	0.28	–	−0.60 (day satisfaction)
Allcott et al. (2020)	0.05	–	0.14	0.06 (momentary happiness) 0.10 (retrospective happiness)
Beyond individuals				
Providing financial support				
Haushofer & Shapiro (2016)	–	–	0.19	0.18 (happiness)
Haushofer et al. (2020b) (cash transfer compared to control)	–	–	0.14	0.16 (happiness)
McIntosh & Zeitlin (2022)	–	–	–	0.47 (subjective well-being composite)
Andersen et al. (2022)	–	–	0.19	–
Haushofer et al. (2020a)	–	–	0.03	0.02 (happiness)
Whillans & West (2022)	–	–	–	−0.04 (subjective well-being composite)
Dwyer et al. (2021)	0.24	−0.21	0.17	–

(*Continued*)

Table 1 (*Continued*)

Study	Effect size (Cohen's *d*)			
	Positive affect	Negative affect	Life satisfaction	Other (e.g., happiness, affect balance)
Dwyer & Dunn (2022)	0.51	−0.43	0.40	–
Lindqvist et al. (2020) (effect size for increasing $100,000 in wealth)	–	–	0.11	0.05 (happiness)
Workplace interventions				
Wu & Paluck (2022)	–	–	–	0.44 (happiness)
Bessone et al. (2021) (sleep intervention compared to control)	–	–	0.02	0.08 (happiness)
Bessone et al. (2021) (nap intervention compared to control)	–	–	0.18	0.33 (happiness)

When Cohen's *d*'s for the comparison of interest were supplied in the manuscript, we used this statistic. When the authors did not provide Cohen's *d* in the manuscript, we typically calculated *d* using the t-statistic from a comparison of means between conditions. Specifically, we calculated *d* using $d = t * \sqrt{1/n_t + 1/n_c}$, with n_t being the treatment group sample size and n_c being the control group sample size. In some cases in which a *t* value was not provided, we calculated *d* using the posttest means, standard deviations, and sample sizes of the control and treatment conditions. For within-subjects designs (which were rare) we used the posttest means, standard deviations, and sample sizes of the two conditions, calculating *d* as if the study had been conducted with a between-subjects design. Negative effect sizes represent declines in the construct of interest. As such, negative effect sizes for negative affect indicate the intervention was successful at reducing negative affect.

(*n*'s ≈ 229).[2] Depending on condition, participants expressed gratitude through text messages, social media, or through messages they wrote but did not share. Meanwhile, control participants wrote lists of their daily activities. Participants who expressed gratitude in any form reported higher positive affect and greater life satisfaction compared to controls (although there was no significant difference in negative affect).

In summary, both preregistered studies provide strong evidence for the immediate benefits of expressing gratitude in American samples. Theoretically, gratitude should have long-term benefits, but these studies do not provide evidence that the benefits last longer than a day after the gratitude practice ends.

Being More Sociable

According to two of the most influential theories of human motivation (Baumeister & Leary 1995, Ryan & Deci 2001), people have a core need to feel deeply connected with others. Such connections may have been critically important for the survival of our species across our evolutionary history, and thus humans likely evolved to find social interactions emotionally rewarding (e.g., Baumeister & Leary 1995).

Theoretically, the best way to satisfy our need to belong is through close relationships (Baumeister & Leary 1995), but even brief social interactions with strangers may provide emotional benefits. In a controlled lab context, American university students were instructed to spend 30 minutes interacting with fellow study participants or to stop interacting whenever they wanted and to spend the remaining time sitting in solitude (*n*'s ≈ 100; Kardas et al. 2022). Students who interacted with strangers for the entire 30 minutes enjoyed the time far more than participants who were allowed to spend some of the time in solitude. Schroeder and colleagues (2022) also

[2] Unless two different sample sizes are reported, the *n*'s we report for each study represent the approximate sample size per condition in each experiment.

examined the benefits of interacting with strangers but in a real-world context. During their commute, London residents were asked to spend their time talking with a stranger, spending their time as they typically would, or sitting quietly in solitude (n's $\approx$ 128). Commuters who were asked to interact with a stranger were in a better mood during the commute compared to those who kept to themselves or behaved as they typically would.

Going beyond a single instance of socializing, Jacques-Hamilton and colleagues (2019) investigated the benefits of acting extraverted for 1 week. Australian adults were assigned either to act extraverted—bold, assertive, outgoing, and talkative—or to act introverted—quiet, sensitive, and calm (n's $\approx$ 58). Throughout the week, people experienced more positive moods if they acted extraverted (versus introverted). Interestingly, this intervention appears to have improved positive mood by changing how people behaved during their social interactions rather than by increasing the frequency of their interactions.

Taken together, these three studies provide compelling initial support for the idea that behaving in a more sociable manner may boost positive feelings. Surprisingly, we could not find any preregistered experiments investigating the benefits of improving close relationships, despite the theoretical importance of these relationships for human well-being.

Registered reports: preregistered studies that are peer-reviewed before data are collected or analyzed and published regardless of whether the results are significant

Acting Happy

Although we typically assume that feeling happy leads people to act happy, the converse may also be true: Simply smiling could make people feel better. This idea dovetails with the facial feedback hypothesis, which posits that our facial expressions can influence our mood. In a classic test of this hypothesis (Strack et al. 1988), participants were instructed to hold a pen in their mouths in a way that prompted them to smile or frown. Participants found a cartoon funnier if they were led to smile. However, nearly 20 years later, 17 research labs failed to replicate this original finding in a registered replication report (RRR), calling the validity of the facial feedback hypothesis into question (Wagenmaker et al. 2016).

Of course, even if the pen-in-mouth task has no effect, a more natural type of smile might enhance mood. To test this possibility, over 20 labs from 19 different countries formed an adversarial collaboration. As part of a registered report, they induced all participants to (*a*) smile and (*b*) hold a neutral expression (in counterbalanced order) and to report how happy they felt after each expression. Some participants were induced to smile with the pen-in-mouth task, while others smiled in a more natural way, by mimicking a photo of someone else smiling ($n \approx 500$). The pen-in-mouth task produced no benefits for mood compared to the neutral expression, but smiling more naturally did lead to elevated mood. Thus, this large study suggests smiling can induce feelings of happiness as long as the smile is natural.

However, this result could be explained by a demand characteristic: Participants who exhibited a natural smile may have reported feeling happier because they thought this was what the researchers expected. To examine this issue, Coles et al. (2023) conducted three additional studies with university students from the United States and Kenya. Some participants were given no information about the researchers' expectations, while others were told that the researchers either expected or did not expect to find benefits of smiling (n's $\approx$ 75). Even after being told the researchers did not expect any benefits from smiling, participants still reported feeling significantly happier after smiling, although these effects were smaller than in the other two conditions.

Still, participants might have reported feeling happier after smiling because they themselves expected to benefit from putting on a happy face. Thus, Coles et al. (2023) recruited people from dozens of countries and identified those who believed smiling could improve mood ($n = 117$) and those who did not ($n = 70$). Even nonbelievers reported being significantly happier after smiling,

MTurkers: participants recruited from Amazon's Mechanical Turk (mTurk), a crowdsourcing website in which workers can be paid for completing tasks, including completing research studies

although the effect was larger among believers. The authors found the same pattern in a smaller study (*n*'s ≈ 28), suggesting that the benefits of smiling cannot be easily explained by expectancy effects.

When Wagenmaker and colleagues (2016) failed to replicate the classic pen-in-mouth study, the facial feedback hypothesis seemed likely to become another casualty of the post–replication crisis era. However, two sets of large, cross-cultural studies provide evidence that exhibiting a natural smile reliably induces immediate mood benefits, regardless of people's beliefs about the facial feedback hypothesis.

Injecting Novelty into Familiar Experiences

Increasing happiness in a lasting way is challenging because people readily grow accustomed to pleasurable experiences, a process known as hedonic adaptation (see Frederick & Loewenstein 1999, Lucas 2007, Lyubomirsky 2011 for reviews). Because people adapt to familiar experiences, adding an element of novelty to these experiences may renew the ability to appreciate them.

To test this idea, O'Brien & Smith (2019) asked participants to watch the same entertaining 1-minute video three times in a row. On the third viewing, some participants were asked to watch while holding their hands up to their eyes in a way that created "hand goggles," thereby injecting some novelty into their experience. Compared to control participants who watched the video in a normal way, participants who watched with hand goggles reported enjoying the third viewing more (*n*'s ≈ 100). On a theoretical level, this study supports the value of adding novelty to familiar experiences, although it is unclear exactly how to apply this in the real world, where hand goggles might quickly lead to hand cramps. Other research, however, points to a practical way that people might be able to inject novelty into their everyday routines. West et al. (2021) assigned American MTurkers to treat their regular weekends as vacations. Compared to participants who behaved like they would on a typical weekend (*n*'s ≈ 220), those who treated their weekend like a vacation reported better moods and greater satisfaction when they returned to work on Monday. The authors replicated these effects in an additional study of MTurkers (*n*'s ≈ 268), though they found weaker effects in a final study with MTurkers and American MBA students (*n*'s ≈ 267). It is possible that these effects emerged simply because people expected to feel happier after treating the weekend like a vacation, but based on mediation analyses, the authors argue that their vacationers felt happier because they became more immersed in the present moment.

Overall, four studies suggest that taking a novel approach to familiar experiences can increase happiness. Going beyond hand goggles and weekend-long vacations, it would be valuable to develop additional ways that people can put this idea into practice in their daily lives.

Looking on the Bright Side

Anyone who has ever experienced a disappointing or stressful event has probably been encouraged to look on the bright side, but is this strategy effective? To put this idea to the test, Rankin & Sweeny (2022) asked American undergraduates to complete a risk assessment of exposure to environmental toxins. While waiting to receive their potentially distressing results, some participants wrote about how finding out they were at a high risk for toxin exposure could have a silver lining, such as being able to avoid future toxin exposure. Compared to participants who simply wrote about their day, students who wrote about silver linings experienced significantly more positive emotion—but no less negative emotion—while waiting for their results (*n* ≈ 100). This study suggests that looking on the bright side could be helpful in the midst of a stressful situation, but another study suggests that such positive thinking may not have lasting benefits. During a single lab session, Australian university students learned about how stress could be a useful emotion in

their lives and how they could use stress to their advantage (Keech et al. 2021). Meanwhile, control participants completed an unrelated mental imagery task (*n*'s ≈ 75). Two weeks later, participants who had learned about the benefits of stress reported viewing stress in a more positive light, suggesting that the manipulation had a lasting effect. However, there were no significant differences between conditions in how much positive or negative affect participants reported experiencing since coming into the lab, suggesting that simply learning to look on the bright side may not yield long-term happiness benefits.

In summary, based on these two preregistered experiments, we think that the advice to look on the bright side may help people feel better about a specific stressor but may not have lasting effects on overall mood.

Changing Diet

Some exciting recent studies using correlational and longitudinal designs suggest that eating more fruits and vegetables might promote happiness (e.g., Blanchflower et al. 2013, Lesani et al. 2016, Piqueras et al. 2011). Testing this idea in a 2-week experiment, Conner et al. (2017) provided young adults in New Zealand with daily servings of fruit or texted them daily reminders to eat more fruit. Compared to participants who were told to maintain their normal diet (*n*'s ≈ 57), neither of the fruit-related interventions increased participants' daily positive or negative affect during the 2 weeks of the study.

In sum, the only preregistered experiment on fruit and vegetable consumption failed to find significant benefits for happiness, but this could be due to low power, underscoring the need for large-scale studies on this topic.

Practicing Meditation

Practicing meditation is one of the most frequently recommended strategies for becoming happier, according to a review of media stories about increasing happiness (Folk & Dunn 2023). Yet, only two small preregistered experiments have tested the SWB benefits of meditation (Noone & Hogan 2018, Schroter et al. 2023). In one of these studies, German undergraduates who listened to a 20-minute guided meditation reported no significant increases in mood immediately afterward, compared to participants who listened to a 20-minute audiobook recording (*n*'s ≈ 56; Schroter et al. 2023). Testing the effects of a longer meditation intervention, Noone & Hogan (2018) found that Irish university students who listened to guided meditations on a mobile app for 6 weeks reported no significant improvements in mood compared to students who listened to unrelated audio recordings (*n*'s ≈ 46).

Overall, two small preregistered studies found no evidence for the mood benefits of meditation. Thus, there is an urgent need for larger, preregistered experiments on this topic, given the—possibly premature—enthusiasm that meditation has garnered as a strategy for increasing happiness.

Helping Others

So far, we have described how people can change their thoughts and behaviors to help themselves get happier—but theoretically, helping others may actually be among the best ways to become happier. Over the course of human evolution, the ability to help one another may have been critical for survival (e.g., Aknin et al. 2013, Henrich & Henrich 2006). Thus, our species may have evolved to experience pleasure from helping others, thereby reinforcing this adaptive behavior. Consistent with this logic, a meta-analysis of 27 experiments found that engaging in a kind or

helpful action produced reliable benefits for SWB (Curry et al. 2018). Although meta-analyses can yield exaggerated effect sizes, Curry et al. (2018) found only a moderate effect size ($d = 0.28$), suggesting that researchers would need over 200 participants per condition to detect the benefits of beneficence.

While Curry et al. (2018) examined a wide range of experimental manipulations involving kindness or generosity, most of the preregistered experiments in this area have focused specifically on prosocial spending, that is, using money to benefit others. Aknin et al. (2022) recently reviewed all 15 published preregistered experiments on prosocial spending, and thus we provide a relatively brief overview of these studies here (Aknin et al. 2020, Hannibal et al. 2019, Martela & Ryan 2021, Miles & Upenieks 2022, O'Brien & Kassirer 2019, Varma & Hu 2022, Varma et al. 2023, White et al. 2022). Of these 15 experiments, 7 included fairly large samples, with at least 200 participants per condition. Almost all of these well-powered preregistered experiments provide support for the contention that using money to benefit others can increase one's own happiness (see Aknin et al. 2022, table 1).

For example, in an RRR, Aknin et al. (2020) paid Canadian university students $2.50 for completing a questionnaire in the lab and then informed them that they could use this money to purchase a goody bag filled with treats. Participants in the prosocial spending condition were told that the goody bag would be donated to a sick child in a local hospital, while those in the personal spending condition were told that the goody bag would be theirs to keep (n's $\approx$ 350). To ensure that participants felt that their spending decision was freely chosen, participants in both conditions were told that they could choose to receive their study payment in cash instead. Picking up the cash payment was somewhat inconvenient, however, which served as a subtle—but effective—nudge that encouraged participants to spend the money, with almost 98% choosing to do so. Having purchased the goody bag, participants watched the research assistant package up the treats, thereby making their purchase concrete and vivid. Consistent with the preregistered hypothesis, participants reported higher positive affect right after purchasing the goody bag for the sick child rather than for themselves. Similar benefits of prosocial spending have been observed in well-powered experiments using other procedures, measures, and samples—including, most notably, among individuals with a history of serious criminal activity (Hannibal et al. 2019).

In contrast, of the eight underpowered experiments (n's < 200) that Aknin et al. (2022) reviewed, only half provided any support for the happiness benefits of prosocial spending (see Aknin et al. 2022, table 1). A newer experiment with a small sample also found little support for the benefits of spending money on others. Kim et al. (2022) gave undergraduates in California $10 to spend on a gift for themselves or someone else (n's $\approx$ 67). There were no differences between conditions in overall positive affect at the end of the day, although participants who bought a gift for others (versus themselves) did recall feeling happier immediately after spending the money on an exploratory single-item measure.

Thus, whereas early experiments on prosocial spending relied on small sample sizes (e.g., Dunn et al. 2008), it is now clear that large samples (n's > 200) are necessary to reliably detect the benefits of spending money on others. Leaving sample size aside, several other patterns also emerge from comparing the results of these preregistered experiments (see also Aknin et al. 2022). First, prosocial spending is more likely to produce detectable increases in happiness when people are asked to engage in actual spending (rather than recalling past spending experiences). Second, choice matters: People are more likely to exhibit a boost in happiness when they have some freedom to choose whether or how to spend on others. Finally, people are more likely to report joy from giving when they are able to directly observe or vividly imagine how their gift will benefit the recipients.

While 16 preregistered experiments have examined the happiness benefits of using money to benefit others, only one has tested the benefits of using time to benefit others through volunteer work. As part of a registered report,[3] Whillans et al. (2017) studied undergraduates at a university in Boston who had signed up for a community service learning program, which entailed completing 10–12 hours of formal volunteering each week. Importantly, because the program was oversubscribed, interested students were randomly selected to participate, enabling the researchers to compare students who completed the program ($n = 232$) with a smaller group assigned to the program's waitlist ($n = 56$). All of these students completed measures of positive affect, negative affect, and life satisfaction—which were combined to form an SWB index—both right before the program began (the first week of the semester) and when it concluded (at the end of the term). Using Bayesian analyses, the researchers found strong evidence in favor of the null hypothesis, suggesting that engaging in volunteer work did not promote SWB. This support for the null hypothesis is notable given that many correlational and longitudinal studies have documented an association between volunteering and happiness (e.g., Musick & Wilson 2003) and that volunteering has been heralded as a pathway to increasing happiness (e.g., Hopper 2020).

Beyond focusing specifically on giving time or money, two recent experiments have examined acts of kindness more broadly. Adults in the United States were told to perform three acts of kindness on one day each week for 4 weeks, while those in a control group kept track of their daily activities over the same period (n's ≈ 80) (Fritz et al. 2021).[4] All participants completed a measure of life satisfaction right before the study began and again at the end of the 4-week intervention period, as well as 2 weeks postintervention, while also completing measures of positive and negative affect every week before and during the intervention period. Compared to controls, participants who completed acts of kindness exhibited no detectable improvement in positive affect, negative affect, or life satisfaction. In a very similar study, university students in Canada were assigned to complete an act of kindness once a day for 2 weeks (Y. Archer Lee, Y.C. Guo & F.S. Chen, unpublished manuscript). Other students were also assigned to complete acts of kindness but to do so anonymously, while those in an active control group were assigned to take a brief break each day to do something fun or relaxing (n's ≈ 135). All participants filled out brief measures of their daily positive and negative affect and life satisfaction for several days before and afterward, as well as completing longer retrospective measures of each aspect of SWB at the beginning and end of the study. Comparing change on these measures between conditions, the researchers found no significant benefits of the kindness intervention on daily life satisfaction or positive affect, or on any of the retrospective measures. However, the researchers found some tentative evidence[5] that engaging in acts of kindness buffered participants from negative affect, although this benefit did not emerge for individuals assigned to complete kind acts anonymously.

In summary, a total of 19 preregistered experiments have tested whether helping others promotes happiness, yielding mixed results. We believe that the most parsimonious explanation for these mixed results is that the benefits of prosocial behavior are real but relatively small, requiring substantial sample sizes (n's > 200) to be detected reliably. That said, it is also notable that all of the strong evidence for these benefits comes from research on using money to benefit others; remarkably, based on our review of preregistered experiments, there is no clear evidence that engaging in volunteer work or practicing acts of kindness can promote happiness.

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[3] Some of the data were collected and analyzed prior to the submission of this registered report, but because the editor and reviewers approved of treating this work as a registered report, we include it in our review.

[4] The experiment also included an active control group, in which participants performed acts of kindness toward themselves ($n = 74$), but analyses involving this group were treated as exploratory.

[5] The observed effects appear to be driven by preexisting differences between conditions in baseline negative affect.

Multicomponent Interventions

Theoretically, the efficacy of any happiness strategy should depend on how well it fits with an individual's own personality, motivation, and circumstances (Lyubomirsky & Layous 2013, Schueller 2014). To maximize such person–activity fit, interventions would ideally be personalized, but a more practical approach may lie in designing multicomponent interventions, which potentially offer something for everyone.

Taking this approach, Hirshberg et al. (2022) created a free smartphone app featuring daily mindfulness and meditation tasks as well as directions to engage in other happiness interventions, such as talking to strangers and thinking about sources of purpose in life. They asked American teachers to use the app for a few minutes a day for 4 weeks. Compared to a waitlist control group (n's $\approx$ 330), teachers assigned to use the app reported higher positive affect at the end of the intervention period—and remarkably, this difference remained significant 3 months later. However, because the app included podcast-style recordings that touted the happiness benefits of the activities included in the app, participants may have reported feeling happier because of their own expectations.

In a similar vein, Hobbs et al. (2022) compared British university students who took an online Science of Happiness course ($n = 166$) with students waiting to take the course ($n = 198$). As part of the course, students completed a series of positive psychology interventions, such as gratitude journaling and practicing random acts of kindness, while learning about the scientific evidence underlying these interventions. At the end of the 10-week course, students scored higher on a measure of overall happiness compared to their peers who had not yet taken the course. Again, expectancy effects cloud the interpretation of this exciting finding: The difference between groups might have emerged because students expected the course to make them happier, based on what they learned about the science of happiness.

Circumventing such expectancy effects is difficult, but one study dealt with this issue by obtaining happiness ratings not only from participants but also from their peers. In this study, adults in North America completed a program called ENHANCE, which involved learning about and completing a variety of positive psychology interventions, from practicing mindfulness and gratitude to engaging in more social interactions (Heintzelman et al. 2020). After 12 weeks of this program, participants reported greater improvements in positive and negative affect and life satisfaction compared to a waitlist control group (n's $\approx$ 67). Importantly, their peers also reported that participants in the ENHANCE group exhibited higher life satisfaction at the end of the intervention, although there were no significant differences in peer reports of mood relative to the waitlist control group. After an additional 12-week maintenance phase that involved check-ins to promote continued integration of the activities into daily life, participants in the ENHANCE (versus control) condition still reported significantly greater life satisfaction, but the difference in peer reports did not reach significance.

Taken together, these three studies suggest that multipronged approaches may be successful in improving SWB, although only one study effectively dealt with the thorny problem of expectancy effects. A notable strength of these studies is that they tested the interventions over much longer time frames than is typical in the broader experimental literature on happiness.

SUBTRACTION

In contemplating how to become happier, it may feel natural to think of new habits or activities that we could add to our lives (Klotz 2021). However, the research reviewed below suggests that eliminating some of our habitual thoughts and behaviors could provide an effective route to happiness.

Avoiding Thinking About Better Futures

When the iPhone 13 was released in the United States, it sold out in a matter of hours (Swingle 2021). Is it possible that people's obsessions with the latest and greatest upcoming technology can cause them to enjoy their current models less? Across three studies, O'Brien (2022) tested whether knowing about an upcoming product upgrade dampens the enjoyment people gain from the current version. In one study, MTurkers played a novel video game; some participants simply saw a flyer for the video game they were about to play, while others saw a flyer for a forthcoming version of this game or for an unrelated forthcoming video game (n's $\approx$ 269). Participants enjoyed playing the game significantly more when they were not made aware of the newer, better version of the game. The author successfully replicated this pattern in two additional studies examining enjoyment of a virtual reality game (n's $\approx$ 104) and an immersive virtual city tour (n's $\approx$ 244).

In sum, this single set of studies provides evidence for the hypothesis that remaining in the dark about exciting future technologies may help us enjoy the present versions more—though it remains to be seen whether this strategy can be harnessed in everyday life.

Reducing Unpleasant Time Use

Subtracting unpleasant tasks from one's day may be an effective, and underutilized, strategy for promoting happiness. For example, household chores (such as cleaning or mowing the lawn) tend to rank among the least happy activities of the day in descriptive studies of time use (e.g., Han & Kaiser 2022, Kahneman et al. 2004). One way to reduce the time devoted to such tasks would be to simply give up on doing them (or on doing them well), but a more practical strategy may lie in paying for time-saving services. Whillans et al. (2017) tested the potential happiness benefits of this strategy in a within-subject study conducted on two consecutive weekends with 60 working adults in Canada. On one weekend, participants received $40 to spend on any purchase that would save them time, while on another weekend, participants received $40 to spend on a material purchase. Participants reported more positive affect and less negative affect at the end of the day when they made a time-saving purchase compared to the day when they made a material purchase. Participants also reported feeling less pressed for time on the day when they made a time-saving purchase, and this reduction in time stress mediated the effect of spending on mood. Although mediation analyses should always be interpreted with caution, this pattern of results is consistent with the idea that cutting back on unpleasant activities may promote happiness by reducing feelings of time pressure. These benefits do not seem particularly surprising, but when Whillans et al. (2017) asked 98 working adults in Canada how they would spend a $40 windfall, only 2% said they would choose to make a time-saving purchase. This suggests that reducing unpleasant time use, like other forms of subtraction, may be an underutilized strategy in daily life.

Would the documented benefits of buying time extend beyond relatively affluent populations? To put this question to the test, as part of a registered report, Whillans & West (2022) conducted a field experiment with a large sample of working mothers in an urban slum of Kenya (n's $\approx$ 360). One group of women received vouchers for laundry services or prepared meals that they could redeem each week for 3 consecutive weeks, saving recipients an average of 3 to 7 hours per week. Meanwhile, a control group of women received no benefit, aside from being paid to complete surveys (a third group received additional money, as discussed in our section below on cash transfers). Using Bayesian analyses, the researchers found evidence supporting the null hypothesis: Women who received time-saving vouchers did not show greater improvements on SWB the week after the intervention ended, compared to women in the control condition. Interestingly, however, exploratory analyses showed that women in both conditions exhibited substantial increases in SWB over the course of the study, perhaps because the additional money all participants earned for

completing surveys was sufficient to enhance their happiness. In any case, this carefully conducted registered report provides some important "evidence of absence": In a severely disadvantaged population, time-saving services did not raise SWB above and beyond the benefits of receiving cash payments for survey completion.

In summary, these two experiments suggest that eliminating unpleasant daily tasks by buying time may be an effective route to increasing happiness for busy working adults in wealthy countries like Canada, but this insight may not generalize well to more financially constrained populations.

Reducing Social Media and Smartphone Use

The world was introduced to Facebook in 2006 (Hall 2023) and to the iPhone in 2007 (Montgomery & Mingis 2022), ushering in a new era of technology. By 2021, adults spent nearly a third of their waking hours using mobile apps, according to an observational study of consumers across ten countries (data.ai 2022). These rapid technological changes have spurred intense debate about the potentially detrimental consequences of smartphones and social media for well-being (e.g., Resnick 2019, Turkle 2011, Twenge 2019). Most empirical discussions of these issues rely on correlational and longitudinal analyses, and the conclusions seem to rest heavily on the researchers' analytical decisions (e.g., Orben & Przybylski 2019, Twenge et al. 2022). Although there are relatively few preregistered experiments on this topic, the existing studies suggest that reducing the use of smartphones and social media can potentially improve happiness.

Why would smartphones undermine subjective well-being? According to recent theorizing (e.g., Kushlev et al. 2019), smartphones may distract people from engaging in social interactions—or may even supplant these interactions entirely. Because social interactions represent an important source of enjoyment in a typical day (e.g., Kahneman et al. 2004), reducing the quality or quantity of in-person interactions should impair SWB. To test the potential role of such distractions in a naturalistic social setting, Dwyer et al. (2018) invited people to have dinner at a cafe in Vancouver, Canada, with several friends or family members (n's $\approx$ 150). Half the groups were instructed to keep their phones out and available during the meal—ostensibly to complete a brief survey later in the meal—while the other groups were instructed to put phones away; this instruction was embedded within other housekeeping details about the study to conceal that the study was actually about phone use. At the end of the meal, participants who had access to their phones reported feeling much more distracted and enjoying the experience significantly less compared to participants who had put their phones away, although the groups did not differ in overall mood. In a similar study (n's $\approx$ 100), parents were asked to maximize or minimize their phone use while visiting a science museum in Canada with their children (Kushlev & Dunn 2019). After spending approximately half an hour at the museum, parents who maximized (versus minimized) their phone use did not differ on a single-item measure of mood, but they did report feeling substantially more distracted and less socially connected (suggesting that mood effects might have been detectable with a longer measure or larger sample). Taken together, these studies suggest that phone use can distract people from fully engaging with loved ones, sometimes leading to downstream negative effects for enjoyment.

Phones may also reduce interactions with strangers. As part of a registered report, Dwyer et al. (2023) asked small groups of unacquainted students in Canada to wait for 20 minutes in a makeshift rec room, with or without their phones (n's $\approx$ 200). When they did not have access to their phones, the students socialized much more and reported enjoying their time in the waiting room marginally more. Of course, in many situations, the costs of missing out on casual interactions with strangers may be largely outweighed by the benefits that phones provide. To examine a common situation in which phones provide useful information, Kushlev et al. (2017) asked undergraduates

to find a building on their large Canadian campus with or without using their smartphones (*n*'s ≈ 46). Participants who did not use their phones talked to more people while finding the building and felt more socially connected. Yet, they reported slightly worse moods by the time they arrived at the building, though this effect was not significant in this small sample.[6] Taken together, these studies suggest that phone use can reduce the quality and quantity of social interactions, but the net consequences for SWB may hinge on the emotional value of these interactions relative to the value of the information (or entertainment) offered by the phone.

This conclusion underscores the importance of understanding how exactly people are using their phones. Smartphones can be used in a wide variety of ways, from listening to podcasts to practicing meditation, but most research has focused specifically on social media use. Because social media may consume immense amounts of time and provoke distressing social comparisons (e.g., Verduyn et al. 2020), it seems reasonable that getting off social media might increase happiness. To test the potential benefits of a 1-day digital detox, Przybylski et al. (2021) conducted three experiments with samples of undergraduates from the United States, United Kingdom, and Hong Kong, all using the same within-subjects design. In each country, participants were assigned to use social media as usual on one day and to abstain completely from social media on another day (*n*'s ≈ 100). This digital detox did not produce reliable effects on overall positive mood, negative mood, or satisfaction with the day; if anything, participants felt slightly worse on the day they abstained from social media.[7]

Of course, it is possible that people need to abstain from social media for longer periods in order to reap the theorized benefits. One exceptionally large and ambitious experiment successfully manipulated longer-term social media use among adults in the United States, all of whom reported being willing to deactivate their Facebook accounts—which they used regularly—in exchange for pay (Allcott et al. 2020). From this sample, 580 participants were paid approximately $100 USD to deactivate their Facebook accounts for 4 weeks, while 1,081 people in the control group were not instructed to alter their Facebook use during this period. Participants responded to single-item text messages assessing their current overall happiness and positive emotions each day throughout the intervention period, and no significant between-group differences emerged. However, at the end of the intervention, participants who gave up Facebook reported feeling more satisfied with life and being happier overall across the preceding 4 weeks, compared to the control group.

Overall, seven preregistered experiments have tested the potential happiness benefits of cutting back on the use of smartphones and social media. These studies point to the conclusion that reducing smartphone use is not inherently beneficial for SWB, but it may increase enjoyment of rewarding social situations, such as dining out with friends. In contrast, brief reductions in social media use (e.g., 1 day) may not feel good at the time, but longer-term abstinence (e.g., 1 month) may ultimately enhance life satisfaction.

BEYOND INDIVIDUALS

While most happiness research focuses on how individuals can change their own thoughts or behaviors to improve their happiness, an exciting body of research is moving beyond this focus on

[6]In a direct replication with a larger sample size, people who did not use their phones reported significantly worse mood, but mood was treated as an exploratory variable (Kushlev et al. 2017, experiment 2).

[7]Specifically, participants in both the United States and Hong Kong reported lower satisfaction on the day of abstinence, and participants in Hong Kong also reported higher negative affect that day, but these effects were not robust when the researchers controlled for variability in age and gender, as preregistered.

the individual, evaluating how governments and organizations can potentially improve people's happiness.

Providing Financial Support

Upon his death in 44 BC, Julius Caesar left 300 Roman coins for each citizen (Goldsworthy 2006). More recently, governments and nonprofit organizations have frequently utilized cash transfers in an attempt to raise the well-being of disadvantaged populations. According to a recent meta-analysis of 45 studies conducted in low- and middle-income countries, cash transfers lead to a small but significant increase in SWB ($d = 0.13$) (McGuire et al. 2022). Although most of these studies were not preregistered, a growing number of rigorous preregistered experiments suggest that such cash transfers and other forms of financial support can provide an efficient mechanism for enhancing happiness.

In an elegant study conducted in rural Kenya, Haushofer & Shapiro (2016) randomly assigned 503 households with thatched roofs—a marker of poverty—to receive unconditional cash transfers. The researchers manipulated the timing of the transfers (monthly versus one lump sum) as well as their size, with each household receiving a total of either $300 or $1,000 USD;[8] even the smaller transfer was double what these households spent in a typical month. Adults in these households completed single-item measures of happiness and life satisfaction approximately 4 months after the final transfer. Compared to a control group of households ($n = 505$) in the same villages that did not receive transfers, cash recipients exhibited significant improvements in both happiness and life satisfaction.[9] These benefits were similar regardless of whether the transfers were provided monthly or as a lump sum—but size mattered, with larger transfers leading to significantly larger increases in life satisfaction. Approximately 3 years later, the researchers followed up with the same participants and found that cash recipients still reported significantly higher levels of happiness and life satisfaction compared to households that had not received cash[10] (Haushofer & Shapiro 2018).

In another study conducted in rural Kenya using the same outcome measures, Haushofer and colleagues (2020b) randomly assigned 540 households to receive $485 USD, which was approximately 20 times their monthly per capita spending.[11] Meanwhile, other households ($n = 525$) received 5 weeks of psychotherapy. Another 493 households received both cash transfers and psychotherapy, while a large control group of households ($n = 1{,}703$) received neither benefit. Approximately 1 year later, cash recipients reported significantly greater happiness and life satisfaction compared to the control group. Interestingly, participants who had received psychotherapy were not happier or more satisfied compared to the control group, suggesting that distributing money may be a more effective intervention than offering therapy in this population.[12]

Cash transfers have also been compared against other interventions, including job training. Poor, underemployed young people in Rwanda were randomly assigned to receive cash transfers ($n = 672$) ranging in size from $317 to $750 USD (McIntosh & Zeitlin 2022). Meanwhile, other

[8]Although participants are normally provided with cash transfers in their local currency, we provide all amounts in USD to facilitate comparisons across studies.

[9]These variables were preregistered for analysis as part of a broader index of psychological well-being.

[10]It is possible that this difference could partially reflect a negative spillover effect, whereby people who did not receive cash became less happy due to their neighbors in the same village receiving cash.

[11]Households were randomly assigned to receive the transfers weekly for 5 weeks or in one lump sum, but the results were similar regardless of delivery timing.

[12]The authors found that receiving both cash and psychotherapy led to marginally greater life satisfaction than receiving cash alone.

participants received job training ($n = 485$), both cash and job training ($n = 203$), or neither form of support (control group; $n = 488$). On average, the cash transfers were roughly double the size of per capita annual income, and the cost of providing them was similar to the cost of providing the job training program. Fourteen months after distributing cash, the researchers measured both happiness and life satisfaction using single-item scales, which they combined to form an index of SWB. Compared to the control group, participants who received cash transfers reported higher SWB; this effect was largest for those who received the biggest transfers, though the effect was significant even for participants who received the smallest transfers. Young people who received job training also exhibited higher SWB compared to those in the control group, but the benefits of receiving cash were about twice as large as the benefits of receiving job training.

Although cash transfers provide perhaps the simplest mechanism for increasing the wealth of disadvantaged populations, one study examined a different mechanism: a housing lottery. In Ethiopia, 1,485 low- and middle-income people won a lottery that gave them the right to purchase a subsidized apartment, leaving them 20 times wealthier compared to people who lost the lottery ($n = 1{,}564$) (Andersen et al. 2022). Two years after the housing lottery, winners were significantly more satisfied with life than losers. Although this substantial improvement in life satisfaction could be due in part to having access to better housing, only one-third of the owners had actually moved in, while one-third were planning to move in, and one-third were renting out the apartment. Thus, the beneficial effects appear to stem largely from the increased wealth of owning this major asset.

In contrast to these promising results, two other studies conducted in Kenya found no happiness benefits stemming from smaller cash transfers. Haushofer et al. (2020a) studied Kenyan metal workers, known as *jua kali*, meaning "under the hot sun" (referring to their difficult working conditions). The workers received either $147 USD ($n = 219$) or a 1-year health insurance policy ($n = 206$) worth the same amount. Meanwhile, workers in the control group ($n = 268$) received no support. Although the cash transfer amount was equivalent to around 1 month of income, the workers who received the money showed no detectable improvements in happiness or life satisfaction approximately 1 year later, compared to those in the health insurance group and control group (which did not differ from each other). In a study of much smaller cash transfers, Whillans & West (2022) provided working mothers in Kenya ($n = 366$) with approximately $4 USD each week for 3 weeks, effectively boosting their income by around 30% during that period. One week after the transfers ended, these women reported higher SWB than they had before the transfers. However, this improvement was no greater than the improvement observed in the control condition, perhaps because women in the control condition also received payments for completing surveys, providing them with a ~15% increase in income.

While all of the studies described above were conducted in lower-income countries, there is a growing interest in examining the benefits of cash transfers in wealthier countries. In a small study conducted in Canada, 50 homeless adults received a lump sum of $6,000 USD, an amount equivalent to 60% of their annual income (Dwyer et al. 2021). One month later, they reported marginally greater positive affect, but they showed no improvement in negative affect or life satisfaction relative to homeless adults who did not receive cash ($n = 75$). These weak but positive effects point to the need for more high-powered studies in wealthy countries, although such studies are inherently expensive.

Most cash transfer studies have been conducted with relatively narrow samples of severely disadvantaged people, but one recent experiment recruited a diverse global sample of participants with household incomes ranging from nearly nothing to $400,000 USD per year. Half the sample was drawn from lower-income countries (Brazil, Indonesia, and Kenya) and half from higher-income countries (United States, United Kingdom, Australia, and Canada) (Dwyer & Dunn 2022). All participants signed up for a "mystery experiment," which was advertised on

Twitter and overseen by the nonprofit organization TED. To the participants' surprise, 200 of them were sent $10,000 USD with almost no strings attached, aside from the instruction to spend this money within 3 months. Meanwhile, the remaining 100 were randomly assigned to a control condition and received nothing aside from survey payments. All participants completed measures of happiness when they signed up for the mystery experiment and again every month for 3 months after the cash transfers were distributed. Compared to the control group, participants who received $10,000 USD exhibited significant gains in life satisfaction and positive affect as well as significant reductions in negative affect. These benefits may have been magnified by the requirement to go on a spending spree, but cash transfer recipients still exhibited elevated happiness on an exploratory survey administered several months after most participants had spent their windfall (6 months after the transfers).

Although the studies described above examined happiness at most a few years after the cash transfers, a study of lottery winners suggests that the benefits of receiving cash may have even more enduring effects. Using a creative quasi-experimental design, Lindqvist et al. (2020) measured happiness among thousands of Swedish lottery players, including 662 who had won large prizes of over $100,000 USD, 1,953 who had won small prizes ($5,000–$100,000 USD), and 772 ticket buyers who had never won. Lottery players were contacted in 2016, between 5 to 22 years after the winners had taken home their prizes. The researchers found no significant long-term effects of winning the lottery on a single-item measure of overall happiness. However, all these years later, winning the lottery resulted in significantly greater life satisfaction. For every $100,000 USD won, lottery players exhibited 0.037 standard deviations more life satisfaction ($d = 0.11$). Although this exchange rate between money and life satisfaction sounds rather unimpressive, the authors note that this improvement in life satisfaction is equivalent to reducing daily commuting time by about half an hour.

Taken together, the collection of studies above provide compelling evidence that increases in wealth cause increases in SWB. While small cash transfers—equivalent to 1 week or month of income—do not necessarily produce benefits, people who receive a large influx of cash exhibit lasting improvements in SWB. Moreover, cash seems to be as good or better than other interventions that carry similar costs, including psychotherapy and job training. Many of the studies in this area stand out for their excellent research practices, including precise preregistrations, potent interventions, long-term follow-ups, and large sample sizes. This literature also includes participants from a wide array of countries, from Kenya, Rwanda, and Ethiopia to the United Kingdom, Canada, and Sweden. Thus, we would point happiness researchers to this area of work as an aspirational model of what is possible.

Workplace Interventions

A typical full-time worker will spend approximately 80,000 hours working (Todd 2020), underscoring the potential value of workplace-based interventions. In an intervention with 1,752 Chinese factory workers (Wu & Paluck 2022), supervisors stepped aside and invited open discussion among team members ($n = 31$ teams) each week for 6 weeks. Meanwhile, in the status quo condition, supervisors lectured their teams on various work-related topics ($n = 34$ teams). One week after the intervention ended, individuals who attended the open discussions were happier than those in the status quo condition, although this difference did not reach significance due to the small number of teams.[13] Another ambitious experiment investigated the benefits of increasing sleep for

[13]The preregistered analysis accounted for group-level covariance, which rendered the results nonsignificant, underscoring the challenges of conducting team-based research.

workers (Bessone et al. 2021). The researchers hired people to work in a data-entry job for 1 month in an office in India. This setup enabled them to test a menu of interventions for increasing workers' sleep, including providing a fully equipped nap station at the office, supplying education and materials to support sleep (e.g., earplugs), and offering financial incentives to increase sleep. Control participants received items (e.g., kitchen utensils) and financial rewards unrelated to sleep (n's = 150). The results suggest that out of all the interventions, napping at work produced the most reliable increases in happiness and life satisfaction.

In summary, these two experiments suggest that relatively simple interventions in the workplace, such as offering a place to nap, can potentially enhance life satisfaction among workers.

CONCLUSION

How can happiness be reliably increased? Our review of preregistered experiments points to the value of expressing gratitude, being more sociable, acting happy, and spending money on others. In contrast, we found surprisingly little support for many commonly recommended strategies for promoting happiness, including practicing meditation, doing random acts of kindness, or engaging in volunteer work. Most happiness research has focused on practices that individuals can add to their lives, but some recent studies provide hints that removing some of our daily habits could also improve happiness; specifically, individuals may benefit from giving up social media use for an extended period or buying themselves out of unpleasant daily tasks. While researchers have traditionally focused on how individuals can improve their own happiness, a growing collection of rigorous studies underscores the potential for governments and organizations to enhance SWB by providing underprivileged people with financial support.

It is important to emphasize that by focusing exclusively on preregistered experiments, we are reviewing only the tip of the iceberg of happiness research. Other experiments appear to provide support for various happiness-promoting strategies, but because these studies were not preregistered, the methodological and analytical decisions underlying their results are less transparent and thus more difficult to evaluate. Moreover, whereas most of the studies we reviewed here had reasonable sample sizes, the vast majority of experimental studies on happiness have relied on very small samples (White et al. 2019). In another recent review, we examined the experimental evidence underlying strategies (e.g., exercise) that are most commonly recommended in the media for increasing happiness (Folk & Dunn 2023). We found that less than 10% of these studies had sufficient power to detect an effect size of $d = 0.43$, which Richard et al. (2003) identified as the average effect size in social psychology.

In contrast, the preregistered experiments we reviewed here suggest that even major interventions may yield much smaller effect sizes (see **Table 1**). For example, after giving up Facebook for 1 month, participants exhibited an increase in life satisfaction of $d = 0.14$. Detecting this effect size in a between-subjects design would require over 800 participants per condition,[14] which far exceeds the sample sizes used in most experiments on social media use. Across our entire review, the largest effect size we observed for life satisfaction was $d = 0.40$ (an effect size that would require 100 participants per condition). In this study, participants received $10,000 USD and completed life satisfaction measures in the midst of a 3-month spending spree (Dwyer & Dunn 2022). This study may provide a useful benchmark for the largest effect size researchers should anticipate for life satisfaction, given an extremely potent intervention.

[14]For all power analyses reported here, we used G*Power to compute the sample size necessary for 80% power to detect the expected effect size with a standard between-subjects t-test ($\alpha = 0.05$).

Rather than testing potentially life-changing interventions, many researchers test the effects of fairly minimal manipulations, but they are able to observe reliable effects by measuring mood immediately afterward. For example, in one prototypical study (Varma et al. 2023), participants reported significantly more positive affect ($d = 0.29$) right after donating a dollar to charity rather than keeping it for themselves. Detecting an effect of this magnitude would require around 200 participants per condition. As the examples above highlight, effect sizes vary widely depending on the methodological features of individual studies. Thus, in conducting power analyses, we urge researchers to carefully consider features such as the potency and duration of their manipulation and the timing and type of their measurements. Although it is tempting to average across all the effect sizes provided in **Table 1**, the resulting average effect size would be essentially meaningless, given the vast heterogeneity of the methods in these studies (e.g., Simonsohn et al. 2022). That said, if researchers were forced to choose an effect size at gunpoint, with no time to review the most relevant studies, we would suggest that a reasonable starting point would be $d = 0.20$ (which would require approximately 400 participants per condition). This very rough benchmark might still be better than relying on previous small studies that were not preregistered. Our reading of the literature suggests that—in the absence of preregistration—small studies with minimal manipulations produce implausibly large effects on happiness.

Indeed, there are good theoretical reasons to believe that happiness should be hard to increase in a lasting way (e.g., Frederick & Loewenstein 1999, Lyubomirsky 2011). Our emotional systems are attuned to change, but we quickly adapt to most stable life circumstances, such that walking down the aisle is thrilling, but walking down the stairs to see our spouse at the breakfast table is not. Thus, it is critical to understand whether the strategies included in this review continue to provide happiness over time. For example, people feel happier when they treat the weekend like a vacation (West et al. 2021), but it seems unlikely that this strategy would continue to deliver benefits weekend after weekend.

Our review also revealed that some of the most important theoretical perspectives in happiness research remain largely untested with preregistered experiments. For example, according to self-determination theory (Ryan & Deci 2001) and work on the need to belong (Baumeister & Leary 1995), feeling deeply connected to close others is critically important for human happiness. Remarkably, however, no preregistered experiment has tested whether increasing the quality or quantity of time that people spend with loved ones can produce lasting benefits for happiness. As another example, according to broaden-and-build theory (Fredrickson 2004), experiencing positive emotions like gratitude can change our behaviors and thought patterns in a way that creates long-term social and psychological resources, thereby increasing our well-being over time. Yet, the only preregistered experiment that tested for the lasting benefits of gratitude failed to find any (Nelson-Coffey et al. 2023). While scholars have traditionally been rewarded for breaking new theoretical ground, there is an urgent need to test important existing theories using modern best practices in open science, particularly preregistration.

Although there is much to be done, we found inspiration in many of the studies we reviewed here. A number of them included diverse samples from Rwanda, Hungary, Indonesia, and other understudied countries, moving beyond the traditional focus on studying WEIRD—Western, educated, industrialized, rich, democratic—countries (Henrich et al. 2010). We are excited to see adversarial collaborations, multi-lab studies, and registered reports that can help to overcome the thorny problem of publication bias (Chambers 2013). Rather than simply creating pallid manipulations on MTurk, researchers have tested happiness interventions in naturalistic settings, from creating an entire office in India (Bessone et al. 2021) to providing laundry and meal vouchers for working mothers in Kenya (Whillans & West 2022). We were impressed by the ambitious design of many of the studies we reviewed, contradicting the old refrain that preregistration undermines

creativity (see Vazire 2018 for discussion). We also noticed that preregistration appears to be contagious: When researchers published a preregistered experiment on a specific topic (e.g., prosocial spending), others followed suit, preregistering their own studies on this topic. We hope that adopting other best practices highlighted in our review—such as using active control groups, avoiding demand characteristics, and recruiting large and diverse samples—will result in similar contagion effects. Finally, a central challenge for future research lies in identifying strategies that produce lasting increases in SWB. We are optimistic that happiness researchers can rise to this challenge, and the studies we reviewed here provide a valuable blueprint.

DISCLOSURE STATEMENT

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