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## TECHNOLOGY AND THE FUTURE OF HAPPINESS

*Elizabeth W. Dunn and Ryan J. Dwyer*

In 1965, Intel cofounder Gordon Moore made a bold prophecy. He predicted that the speed and power of microchips would double every year for at least a decade. Although he later revised this prediction slightly (noting that the doubling would occur every two years), the exponential growth he envisioned has now held up for five decades—and has been enshrined as “Moore’s Law.” Because it’s difficult to comprehend the overwhelming rate of change that exponential growth creates, engineers at Intel recently calculated what a 1971 Volkswagen Beetle would look like today if it had evolved at the same rate as microchips: You could drive the Beetle 300,000 miles per hour, you would only need to buy one tank of gas in your life, and the car would cost you a grand total of four cents (Friedman, 2016). By its very nature, exponential growth means that the faster something gets, the faster it gets faster. All of this growth hit a tipping point between 2006 and 2007, when a series of breakthroughs enabled the advent of the iPhone, Facebook, Twitter, and other platforms that now permeate our everyday lives. But have all of these advances increased our chances of living the Good Life?

Around the world, advances in computing technology have provided people with access to the entire store of human knowledge at little or no cost. A young woman growing up in Nairobi can now sign up for a free online computer science course offered by Harvard, and people can lift themselves out of poverty with the help of micro-loans delivered via their smartphones. Friends who are oceans apart can connect with each other anytime for free on Skype, and children who are running late getting home can reassure their worried parents with a simple text message. As Amichai-Hamburger and Etgar (this volume) describe, the Internet makes it easier for people to seek others who are like them, which may be particularly important for members of marginalized groups (e.g., LGBT youths). While appreciating the myriad ways in which rapid advances in technology are

increasing access to the Good Life, it is important to recognize that enhancing well-being is not the driving force shaping these advances.

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The spread of new technologies can be thought of in much the same way as the spread of “selfish genes.” As Hamilton (1963) put it, “the ultimate criterion which determines whether [a gene] *G* will spread is not whether the behavior is to the benefit of the behaver, but whether it is to the benefit of the gene.” Likewise, new technologies can spread if they are effectively designed to propagate themselves, even if they do not enhance the lives of their users. For example, apps that push notifications to the front of their users’ screens may be more likely to capture attention, even though users may not benefit from having their limited attentional resources captured. This idea is taken to its logical extreme with “clickbait,” sensational—and often false—online news stories created entirely to attract clicks and shares; these questionable news stories are unlikely to provide real informational value, and some commentators suggest that such misleading stories may have played a key role in enabling the election of Donald Trump (e.g., Parkinson, 2016).

Given the unprecedented current pace of technological innovation, we propose that well-being researchers have a critical role to play in ensuring that these advances are harnessed to promote, rather than undermine, the pursuit of the Good Life. In this chapter, we begin with the rapidly evolving present, highlighting how today’s most ubiquitous microchips—smartphones—can both support and subvert well-being. We then look forward to the near future, in which this advancing technology could be used to more effectively promote the Good Life. Finally, we take a long view, considering how deploying well-being research now can help us prepare for a not-so-distant future, in which robots render much of human work unnecessary. Taken together, this chapter sheds light on the future of the Good Life.

## Back to the Present

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One of the clearest conclusions from happiness research is that positive social interactions and relationships are of paramount importance in the pursuit of the Good Life (e.g., Baumeister & Leary, 1995; Diener & Seligman, 2002; Gable, this volume; Sandstrom & Dunn, 2014). It should therefore come as no surprise that people around the world have harnessed the power of microchips for social purposes. Although mobile apps offer a vast array of tools, the five most popular apps in the world—WhatsApp, Messenger, Facebook, Snapchat, and Instagram—primarily offer the opportunity to connect with others (Richter, 2016).

But a growing body of research suggests that these virtual interactions may be less likely to promote happiness compared to actual face-to-face interactions (e.g., Kross et al., 2013; Holtzmann et al., 2017; Sacco & Ismail, 2014; but see Sheldon, Abad, & Hinsch, 2011 for important nuances). For example, after completing a stressful speech, young women were randomly assigned to receive social

support from a close friend either in-person or via text messaging (Holtzmann et al., 2017; DeClerck, Turcotte, Lisi, & Woodworth, 2017). Although they rated the two types of support as equally satisfactory, they felt significantly happier after receiving support in-person. In fact, receiving support via text messaging provided negligible benefits compared to not receiving support at all. Turning to social media, in a longitudinal study of Facebook users, Kross et al. (2013) found that increases in Facebook use were linked to decreases in mood over time; meanwhile, increases in actual (e.g., face-to-face) social interactions were linked to improvements in mood. Using Facebook to actively engage with others (e.g., by commenting on posts) can produce positive effects for mood, but people spend more time using Facebook passively (e.g., scrolling through posts), which appears detrimental for mood (Verduyn et al., 2015). Taken together, this research suggests that spending time on our screens may not be a good substitute for spending time with other people.

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### *The Role of Distraction*

The siren song of our screens may impair our ability to connect with people in our immediate social environment. Being barraged with notifications from our attention-seeking apps may make it difficult to remain focused and present. In a sample of over 200 undergraduates, Kushlev, Proulx, and Dunn (2016) found that individuals who reported getting interrupted more often by their phones scored higher on measures of inattention and hyperactivity. Half of the students were then randomly assigned to disable all notifications on their phones for one week and to keep their phones out of sight; the following week, these students were assigned to turn notifications on and keep their phones within reach. The other half of students were assigned to follow the same instructions in the reverse order. Participants scored higher on both inattention and hyperactivity when their smartphones were configured to enable notifications. And the more inattentive people felt, the lower they scored on a wide range of variables related to well-being, including environmental mastery, meaning in life, and social connectedness.

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From our theoretical perspective, inattention should reduce the ability to derive well-being benefits from valued daily activities, including social interactions (Brown & Ryan, 2003; Huppert, this volume; Quoidbach et al., 2010). To test this idea, Kushlev and Dunn (2017) recruited parents who were visiting a science museum with their children and randomly assigned them to maximize or minimize their smartphone use during the visit. By the time they left the museum, parents in the high-use (vs. low-use) group felt more distracted and less socially connected, and even reported feeling less meaning and purpose. Interestingly, these negative effects on social connectedness emerged even when people were using their phones to engage in social activities, such as texting or using social media. In fact, phone use only enhanced feelings of social connectedness when parents utilized their phones to access content relevant to their child's

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experience at the science museum (e.g., supplementary information about exhibits). These findings suggest that any phone use that directs attention away from the immediate social environment may make it more difficult to derive benefits from spending time with close others.

Of course, life has always been filled with potential distractions. But by offering access to an unlimited array of information and entertainment—in a portable device that can be taken anywhere—phones are uniquely poised to permeate important social interactions. Indeed, in a nationally representative survey of over 3,000 cell phone owners in the United States, almost 90% of respondents said that they had used their phones during their most recent social gathering (Pew, 2015). And in a qualitative, observational study of parents eating out with their children at Boston-area fast-food restaurants, researchers observed that many parents exhibited a high degree of absorption in their phones (Radesky, Kistin, Augustyn, & Silverstein, 2014).

Because sharing a meal with family and friends represents a central form of daily social interaction across cultures, we manipulated phone use in this context (Dwyer, Kushlev, & Dunn 2017). We invited over 300 people, including students and community members from Vancouver, Canada, to have dinner at a local café with their family or friends. In the phone condition, participants were told that they would be asked to answer a question via text partway through the meal, and that they should keep their phones on the table with ringer or vibration on to ensure they received the question; this approach enabled us to ensure that phones were present without revealing that their presence was the focus of the study. Meanwhile, groups assigned to the phoneless condition were also told that they would be handed a survey (on paper) partway through the meal, and they were instructed to turn their phones on silent and place them in a container on the table; this request was embedded within other instructions about the study to avoid making it salient. At the end of the meal, all participants were asked to complete a survey about their experience. Despite the subtlety of our manipulation, participants in the phone condition reported feeling more distracted during the meal and reported enjoying it significantly less.

Moving beyond this specific context, we conducted an experience sampling study with over 100 students in the southern United States (Dwyer et al., 2017). Over the course of a week, participants received five text messages per day asking them what they had been doing and feeling in the preceding 15 minutes. When participants had been engaging in face-to-face interactions, they felt more distracted and reported lower interest and enjoyment, as well as lower social connectedness, if they had also been using smartphones than if they had not. In an observational study conducted at coffee shops, Misra, Cheng, Genevieve, and Yuan (2014) studied the behavior of pairs of people sitting together, and then asked them to complete surveys about their feelings. They found that participants reported lower levels of social connectedness in dyads where either member accessed a mobile device (e.g., smartphone, laptop). Although distraction was not measured and the correlational nature of the study precludes causal conclusions,

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Misra et al. (2014) theorize that the presence of phones may divide attention, undermining feelings of social connection. There is even some evidence that the mere presence of phones in the visual field may undermine feelings of closeness during face-to-face interactions (Przybylski & Weinstein, 2012), possibly by priming people to think of their broader social networks and thereby dividing attention. Taken together, this growing body of research points to the conclusion that phones may undercut the benefits of face-to-face interactions by distracting people from their immediate social environment.

### ***Negative Social Signals***

In addition to these intrapsychic costs, using phones during social interactions may produce interpersonal costs by acting as a negative social signal. In 2016, the *Oxford English Dictionary* added the word “phubbing” to describe the act of snubbing others by devoting attention to one’s phone. Not surprisingly, individuals who say they are frequently phubbed by their romantic partners report lower relationship satisfaction, which in turn predicts lower life satisfaction (Roberts & David, 2016). To test the causal role of phone use in social perception, researchers brought pairs of unacquainted students into the lab, and asked one member of each pair to serve as a confederate (Vanden Abeele, Antheunis, & Schouten, 2016). When confederates were randomly assigned to reach for a smartphone several times during a ten-minute social interaction, they were rated as being significantly less attentive and polite than when smartphones were absent. These negative effects were magnified when participants proactively accessed phones, rather than responding to an obvious notification. This finding suggests that phone use may be particularly detrimental when it conveys an internal lack of interest in the conversation rather than a response to external demands.

Of course, in some cases, phone use may provide an accurate social signal of disinterest; in a recent Pew survey, almost half of young people (ages 18–29) reported using their smartphones to avoid others around them over the course of a week (Pew, 2015). But phone use may be a noisy signal. A key property of smartphones—their capacity to serve so many different functions—makes it difficult to infer whether people are using their phones for an essential purpose, such as responding to an urgent text message, or simply seeking casual entertainment by surfing social media. This property should create a high degree of attributional ambiguity, which may make people reluctant to strike up a conversation with phone users—even when phones are used merely to pass the time in a manner that is less satisfying than engaging in face-to-face social interaction.

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### ***An Easy Substitute for Social Interactions***

Given these important social costs, why have smartphones been adopted more rapidly than any other technology in history? According to the Principle of Least Effort, organisms will seek out the easiest, most convenient route to achieving a

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goal (Ferrerro, 1894). Because smartphones enable us to accomplish a vast array of goals quickly and easily, we may turn to them for information and entertainment, even if doing so comes at the potential cost of social connection. To explore

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this idea, Kushlev, Proulx, and Dunn (2017a) asked university students to find an unfamiliar building on campus, either with or without using their smartphones. Stripped of their smartphones, the typical participant talked to about two to three other people in the course of trying to find the building. In contrast, those who were allowed to rely on their smartphones typically talked to no one. Although eliminating these social interactions might seem trivial (or even beneficial), participants who were able to rely on their smartphones arrived at the building feeling significantly less socially connected, compared to people who had to find the building without using smartphones.

At the same time, of course, smartphones made the task of finding the building much easier; armed with their smartphones, participants got to the building several minutes earlier and rated the task as being less difficult, compared to phoneless participants. And the easier participants found the task, the happier they felt afterward, as we would expect based on the Principle of Least Effort. Although this was a large effect, participants who were carrying powerful computers in their pockets ended up only slightly happier than participants whose phones had been taken away. Why? The massive benefit that phones provided in terms of convenience was significantly undercut by the cost they created in terms of foregone human connections. That is, by relying on technology rather than other people, phone users were able to accomplish the task more easily and efficiently, but in doing so, they missed an opportunity for casual interpersonal encounters when asking for directions.

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When other participants simply imagined trying to find the building with and without their phones, they accurately forecasted that they would (a) find the task easier and (b) end up feeling less socially connected if they used their phones (Kushlev, Proulx, & Dunn, 2017b). They also recognized that the convenience provided by phones would make them happier. But they failed to recognize that the loss of social connectedness would have a countervailing, negative effect on their happiness. These findings point to the conclusion that new technologies that reduce effort may be readily adopted, even if people recognize that this efficiency might come at the cost of social connection. For example, people may recognize that scrolling through Facebook or texting a friend will provide less social connection than having a real face-to-face interaction, but the minimal effort required for social media and texting may drive people to opt for these less rewarding activities.

### *Integrative Summary*

Taken together, the research reviewed above highlights three key mechanisms—distraction, negative social signals, and substitution—through which powerful

microchips that keep us constantly connected may actually undermine feelings of social connection and happiness. First, by providing a pervasive source of distraction, phones may make it more difficult to derive emotional benefits from potentially rewarding social activities, such as spending time with friends and family. Second, by sending negative social signals, phone use may exert interpersonal costs, impeding the development and maintenance of relationships. Third, by enabling people to access information and entertainment with minimal effort, smartphones may act as a substitute for actual interactions with people in the immediate social environment.

### Toward a Happier Horizon

By identifying these three mechanisms, it is possible to envision how the negative effects of today's smartphones and tomorrow's microchips could be minimized or even reversed. Although individual apps benefit from clamoring for attention, the negative effects of distraction point to the potential value of "meta-apps" that keep the resulting cacophony under control. A company called Ringly recently introduced rings that vibrate or light up in response to certain notifications, selected by the user, making it possible to keep smartphones out of sight. For example, during a night out with friends, a single mother could put her phone away, entrusting the ring to light up only if the babysitter called. As sensors become more advanced, it may be possible for smartphones and other mobile devices to automatically detect what we are doing and who we are with, enabling them to minimize distractions when we are engaging in valuable activities, such as spending time with loved ones.

By recognizing that screens can send negative—and noisy—social signals, it may also be possible to re-engineer new and existing technologies. For example, the light already built into the back of smartphones could produce a faint colored glow that would provide a more informative social signal, turning red to indicate phone use that should not be interrupted and otherwise glowing green to invite social interactions. Already, dating apps such as Tinder, Grindr, and Happn make it easy to meet up with potential romantic or sexual partners who happen to be nearby, but this existing technology could be repurposed to promote nonsexual interactions by enabling precise and frictionless social signaling. As one example, imagine that you installed an app indicating where and when you were open to talking to strangers. If you were knowledgeable about your hometown and liked to share this knowledge, you could indicate this openness; visiting tourists who had the app and happened to be riding the same public bus would know to approach you for a mutually rewarding chat about this topic. And if you were finding your way around an unfamiliar city, you could use the app to identify people in the immediate vicinity who would be happy to help you. In this way, technology could be harnessed to send clearer social signals, such that screens could facilitate, rather than supplant, face-to-face interactions.

Extremely successful technology developers have recently voiced concerns that their rapidly adopted products may be undermining human well-being; as Twitter cofounder Evan Williams put it in 2017, “The internet is broken.” This growing recognition can potentially provide an opening for well-being researchers and technologists to work together in beginning to reverse this trend.

### *Promoting Well-Being Directly*

Indeed, the ubiquity of current smartphones and future microchips may be harnessed to promote well-being directly. In conjunction with the rapidly evolving mHealth movement—whereby mobile technology is utilized to improve health—developers have created a number of smartphone apps that offer to enhance happiness. Unfortunately, there is a dearth of rigorous research to evaluate the efficacy of these apps (see Konrath, 2015, for a review). There is, however, some intriguing preliminary evidence that well-designed smartphone apps may promote behaviors linked to well-being, such as helping others (Konrath et al., 2015) and expressing gratitude (Ghandeharioun, Azaria, Taylor, & Picard, 2016; see also Huppert, this volume). As Konrath (2015) argues, interventions that harness mobile technology offer a number of important advantages. Thanks to the widespread adoption of this technology, interventions can potentially reach large and diverse populations around the world. As a result, mobile technology is poised to help researchers address two fundamental problems in social psychology: the use of small samples and the reliance on samples that are Western, Educated, Industrialized, Rich, and Democratic (Henrich, Heine, & Norenzayan, 2010).

In addition, mobile technology makes it possible to deliver interventions in everyday contexts, increasing their capacity to affect behavior in daily life. This is important because simply asking people to alter their behavior may be insufficient to change deeply ingrained habits (Konrath, 2015). For example, our lab has found that people feel happier and report a greater sense of belonging on days when they take the time to interact with strangers and acquaintances—but we also found that simply instructing people to increase these interactions had no effect on their behavior (Sandstrom & Dunn, 2014). Smartphones could be harnessed to deliver this intervention more effectively by utilizing location-detection capacities to provide people with reminders to change their behavior when they entered relevant contexts. As sensors improve, it may be possible for smartphones (and their technological descendants) to detect a wide range of information about the social setting, making it possible to tailor interventions even more precisely.

### *Monitoring Happiness*

Sensors may also make it possible to detect current happiness levels automatically, enabling the deployment of interventions at key time points—as well as the evaluation of their efficacy. There is some preliminary evidence that state-like



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changes in mood can be detected using current smartphone technology. In a small pilot study, researchers collected data from six patients with bipolar disorder over a period of months (Karam et al., 2014). Using an app installed on their smartphones, all outgoing speech was recorded during their phone calls (thereby capturing the voices of the patients, but not their conversation partners). By harnessing machine learning, the researchers were able to use the acoustical properties of participants' voices during these calls to infer their mood states, as rated by trained clinicians on the same days as the phone calls. Building on this work, our lab is currently investigating whether we can use smartphones to assess momentary happiness unobtrusively in nonclinical populations. Eventually, this approach could enable us to examine the efficacy of novel interventions designed to promote happiness, while minimizing the demand characteristics that often plague this area of research. We believe this goal is especially important to pursue now, given that advances in technology may soon provoke dramatic changes in the fabric of everyday life, a topic we turn to in the next section.

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## A Fundamentally Different Future

In 1930, John Maynard Keynes famously predicted that the increasing efficiency of machines would reduce the workweek to 15 hours by 2030 (Keynes, 1930). While the 40-hour week is still the norm, recent advances in technology are paving the way for a world in which robots do much of the work for us. Some of our most dreaded tasks may soon be automated—such as flipping burgers, manual labor, and customer service (Kim, 2016). But the potential of machines is now stretching far beyond simple and repetitive tasks. For example, a driverless semi-truck named “Otto” recently completed the world’s first automated commercial truck delivery (Bloomberg). This may be just the beginning of a much bigger trend; Oxford researchers claim that machine learning and other advances in information processing could automate as many as half of all jobs by 2050, including many white-collar and creative jobs (Frey & Osborne, 2013).

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The potential changes spurred on by technological advances have raised serious questions about how to prepare for a future where human labor is no longer needed. How would people make a living if they did not work? Universal basic income—a guaranteed livable income for all citizens without regard to work status—has generated a lot of interest as a potential solution. The idea of a basic income has been around in various forms for centuries (Vanderborght & Van Parijs, 2005), and despite its radical nature, both liberal and conservative thinkers have supported it (De Rugy, 2014).

If people could rely on a basic income, would the trend toward a workless world usher in an era of happiness? On the one hand, working hours are among the most unpleasant in many people’s days (e.g., Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Krueger et al., 2009), and nearly 70% of employees are not engaged at their job (Gallup, 2016). If society’s most dull and menial jobs were

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replaced by automation, the “daily grind” could be replaced by relaxation and leisure. On the other hand, research shows that people who are unemployed are less satisfied with their lives than their employed counterparts, even after controlling for relevant factors like income (Knabe, Rätzel, Schöb, & Weimann, 2010). In addition, unemployment can have severe and long-lasting negative psychological effects (Knabe & Rätzel, 2011) that remain even after reemployment (Anusic, Yap, & Lucas, 2014; Clark, Georgellis, & Sanfey, 2001). And across seven Western countries, almost half of respondents reported that work provided an important source of meaning in life (Delle Fave, Brdar, Wissing, & Vella-Brodrick, 2013; see also Baumeister, this volume).

While there has been much speculation about the potential impact of basic income and a workless world, there has been little data directly examining these issues, until recently. A number of government projects are now underway in countries like Canada, the Netherlands, and Finland (Henley, 2017). Even Silicon Valley has taken interest, in the hope of better understanding how the benefits of technological progress might be spread throughout society. A renowned startup incubator, Y Combinator, is currently investing millions of dollars to study the impact of implementing a guaranteed basic income in the United States (Altman, 2016). The company put out a request for research in January of 2016, and they are now working with researchers on a pilot project that will pay 100 Oakland residents \$2,000 a month for a year—no matter what they do. The goal is to see how basic income influences people’s financial and psychological health, and to see how they spend their time. If the methods work, they hope to expand the basic income study to more people over a longer time period.

Studies of this sort will provide unprecedented insight into the psychology of the Good Life, by allowing us to see what people do when working is unnecessary. But they also highlight the need to consider impending societal changes that will result from rapid technological advances. Well-being researchers are in a unique position to advocate for progress that promotes—rather than undermines—the Good Life. Of course, recommendations about *how* to enhance the Good Life should be grounded in psychological theory and backed by evidence.

Decades of research in positive psychology have found that humans are more likely to be happy if they meet: (a) basic physical and health needs (Angner, Ghandhi, Williams Purvis, Amante, & Allison, 2013; Deaton, 2008; Veenhoven, 1991), and (b) psychological needs for autonomy, competence, and relatedness (see Gagné & Lydon, 2004, for cross-cultural evidence; Ryan & Deci, 2000; Baumeister, this volume). We argue that a universal basic income—setting aside all economic and political hurdles—would certainly help citizens live *better* lives by ensuring their basic physical needs are met. However, in order to promote *the Good Life*, basic income must further enhance autonomy, competence, and relatedness. In the remaining sections of this chapter, we use self-determination theory (Ryan & Deci, 2000) as a framework for understanding the conditions under

which people could be most likely to find happiness in a world where basic needs are met and work is no longer a necessity.

*Autonomy.* People want to choose what they do in life (Ryan & Deci, 2000), but they must sacrifice their time by working in order to make ends meet each month. In a world where machines have replaced human labor, a basic income could provide people with more freedom to choose how to spend their time without worrying about paying rent. This could allow people to invest their time into achieving self-directed goals, such as gaining higher education or creating art. In fact, people are motivated to stay busy and to be productive (Hsee, Yang, & Wang, 2010), especially on tasks that are intrinsically rewarding (Ryan & Deci, 2000). According to the General Social Survey, nearly three-quarters of Americans say they wouldn't quit their jobs even if a financial windfall enabled them to live in luxury for the rest of their lives (Brooks, 2013). In sum, people want to spend time on tasks they care about, so a basic income will likely only promote the Good Life if it helps people pursue intrinsically motivated goals. Thus, jobs that are dull and disliked, such as repetitive or low-skilled labor and service industry jobs (Smith, 2007), should be targeted for automation, while jobs that are intrinsically satisfying might be better left to humans. In the transition to an automated workforce, a basic income could help displaced workers retrain for jobs that are not easily automated or allow them pursue their interests beyond work.

*Competence.* While basic income could provide people with autonomy over how they spend their time, people also need to feel that they are competent and efficacious in order to be happy (Ryan & Deci, 2000). For example, research shows that people are more likely to be happy when they are in flow—exercising expertise in a task with full engagement (Csikszentmihalyi, 1990). Many people experience competence at work, so some have suggested that automatization could deprive people of satisfying this need and lead to meaninglessness and depression (Thompson, 2015). Unemployment can also negatively affect self-perceptions of competence due in part to failing to meet the cultural expectation to work (Schöb, 2013). For example, a study using a German sample found that life satisfaction increased when retirement-age job seekers changed their status from “unemployed” to “retired,” suggesting that the expectation to work affects the psychological impact of unemployment (Hetschko, Knabe, & Schöb, 2014). To the extent that mass automation reduces the cultural expectation to work, people who are unemployed may be less likely to be perceived—by themselves and others—as incompetent, potentially reducing the detrimental effects of unemployment on well-being (Stutzer & Lalive, 2004).

A basic income could promote competence by enabling people to devote their time to engaging hobbies instead of dull work, but research suggests people may need assistance in dealing with the extra time. Time use surveys, for example, reveal that unemployed people spend much of their extra free time sleeping and watching TV (Aguiar, Hurst, & Karabarbounis, 2011), and retired seniors watch nearly five hours of television a day (Bureau of Labor Statistics, 2015), likely to

the detriment of their own well-being (Frey, Benesch, & Stutzer, 2005). Thus, in moving toward a workless world, it may be important to provide people with “leisure training,” helping them build the skills necessary to engage deeply with challenging hobbies that satisfy the need for competence.

*Relatedness.* People have a need to feel connected to others (Ryan & Deci, 2000), and social relationships are one of the best predictors of happiness (Lyubomirsky, King, & Diener, 2005; see also Gable, 2017; Lyubomirsky & Fritz, 2017), but working necessitates spending time away from loved ones. In fact, one of the most common complaints of working adults is lack of work–life balance (Ernst & Young, 2015), and at the end of life, people often regret working so much and not having spent more time with loved ones (Ware, 2012). A world without work could enhance well-being by allowing people to spend more time with close friends and family. Research on the time use of retired Dutch seniors shows that they become more engaged in civic activities and provide more instrumental support to their family after they retire compared to seniors who continue to work (Van Den Bogaard, Henkens, & Kalmijn, 2014). Data from the American Time Use Survey also shows that the unemployed spend about 50% more time socializing compared to employed individuals (Katz, 2015). At the same time, working forces us to interact with others, and the workplace can also be socially rewarding in its own right (Mottaz, 1985). To prepare for a future in which the workplace no longer provides a central source of social interaction, communities should strive to create more public spaces that encourage social interactions (Montgomery, 2013). In fact, Putnam (2000) has argued that civic engagement has been declining for decades in the United States. By providing people with more free time, a world without work—aided by thoughtful urban design—has the potential to reverse this trend, thereby helping to fulfill our need to connect.

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## Conclusion

One of the most puzzling findings in happiness research is known as the Easterlin Paradox. Over the past five decades, many countries have witnessed substantial economic growth, but this progress has not been consistently accompanied by sustained increases in happiness (e.g., Easterlin, 2010). Looking ahead to the next five decades, this finding provides a cautionary tale: Progress does not inevitably lead to increased well-being. Indeed, recent research on smartphones suggests that the powerful microchips designed to connect us can sometimes leave us feeling more disconnected. As a result, even though smartphones make life easier, this major technological advance may fail to substantially increase happiness. By shaping the way new technologies are developed and utilized, however, well-being researchers may be able to increase the odds that rapid growth in technology will be accompanied by growth in human happiness. Researchers have already begun to use modern microchips to measure and enhance happiness, although this work is in its infancy and demands much more attention. As the fabric of daily life is

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renew and work becomes increasingly unnecessary, well-being researchers should play a vital role in ensuring that these fundamental changes nourish—rather than neglect—fundamental human needs. Although these changes lie in the future, the time to prepare for them is now.

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