Toward a science of effective well-doing

Abstract

People's intentional pursuit of prosocial goals and values (i.e., *well-doing*) is critical to the flourishing of humanity in the long run. But some of the most socially beneficial pursuits are often neglected because they are unintuitive. To choose such pursuits people have to apply critical thinking and far-sighted decision-making in the service of the long-term flourishing of humanity. This approach can be taught and facilitated. But there is only very little psychological research on effective well-doing and how it can be promoted. This makes developing interventions for promoting effective well-doing one of the most valuable contributions that psychology and other behavioral sciences can make in the 21st century. To seize this opportunity, we need to better understand the determinants and psychological mechanisms of effective well-doing, as well as the barriers to effective well-doing and how they can be overcome through interventions and personal development. We discuss different types of (effective) well-doing and their mechanisms, review relevant previous work, and highlight important open questions.

Keywords: well-doing; effective altruism; personal growth; ill-doing; goals and values; prosocial behavior

1. We need a science of effective well-doing

There are reasons for optimism about the future of humanity. Large-scale conflicts between powerful nations or states have decreased over the past 500 years (Roser, 2016), and violence may be on the decline in many parts of the world (Pinker, 2011). The past few decades have seen dramatic reductions in poverty worldwide (Roser & Ortiz-Ospina, 2013), and the quality of human life is generally improving on many dimensions (e.g., Roser, 2014; Roser et al., 2013). But suffering is still far too common, and humanity faces many challenging problems that require drastic changes in how we live and work (United Nations, 2015). Solving these problems requires the collective action of governments, scientists, organizations, and individual citizens. To live up to our collective responsibility for humanity's future, we have to find ways to empower and motivate citizens to engage in adaptive problem-solving on behalf of future generations and the biosphere (Messerli et al., 2019).

Although some of humanity's progress might have been a historical happenstance, it is clear that deliberate, coordinated, evidence-based efforts can be effective (Halstead, 2015). These efforts are a prime example of *well-doing*. Well-doing, broadly construed, encompasses acting and thinking in ways that benefit the well-being of humanity in the long run. What if there were an interdisciplinary science focused on discovering reliable ways of promoting and supporting forms of well-doing that are highly beneficial to the greater good and the well-being of the individual? How much more of humanity's potential could we unlock through such research?

Saving a person's life is widely regarded as one of the most meaningful and most exhilarating good deeds. Contrary to many people's pessimism, the average American might be able to save one life every year by donating just 10% of their income[1] (MacAskill, 2015; Todd,

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[1] Donating no more than 10% of their net income to the vitamin A supplementation program of Helen Keller International would be sufficient to achieve that because this program saves one life for every $2795 they receive in

2016). People can do even more good by pursuing a career that lets them work directly on important human problems (Todd, 2016). For instance, David Nalin saved at least 500,000 lives by discovering a simple treatment for life-threatening dehydration caused by severe diarrhea, and Karl Landsteiner saved tens of millions of lives by his discovery of blood groups. There are many ways to promote the collective well-being of humanity in the long run. These include working for effective charities, doing research on important problems, advocating for good causes, and developing technologies that improve people's lives.

Most people in developed countries could pursue a career with an expected social impact that exceeds the value of saving one life per year (Todd, 2016). This means that, collectively, we could do a tremendous amount of good by solving important problems. But, for the most part, we don't. Compared to the enormous, technology-amplified opportunities we collectively have to make the world a better place, we do very little. Instead of adopting an environmentally sustainable lifestyle, most people continue with consumerism as usual (Australian Bureau of Statistics, 2010). Instead of saving lives by donating to effective charities, too many people waste money on things they don't need (Kasser, 2002). Instead of having a meaningful career and working hard toward making the world a better place, most people in developed countries choose jobs that they (often rightfully) find meaningless (Graeber & Cerutti, 2018; Rastogi et al., 2018). They become disengaged employees and citizens (Graeber & Cerutti, 2018; Rastogi et al., 2018), do not use their full mental capacities (James, 1907), and never fully develop their potential to have a positive impact on the world (Maslow, 1962). This is a tragedy for both the people whom the disengaged could have helped and the well-being of the disengaged people themselves (Klein, 2017; Weinstein & Ryan, 2010; Baumeister et al., 2013).

donations (GiveWell, 2020). Our calculation assumes that the median annual net income in the United States of America is $62,000 per household (U.S. Census Bureau, 2019) and that the average American works for 42 years.
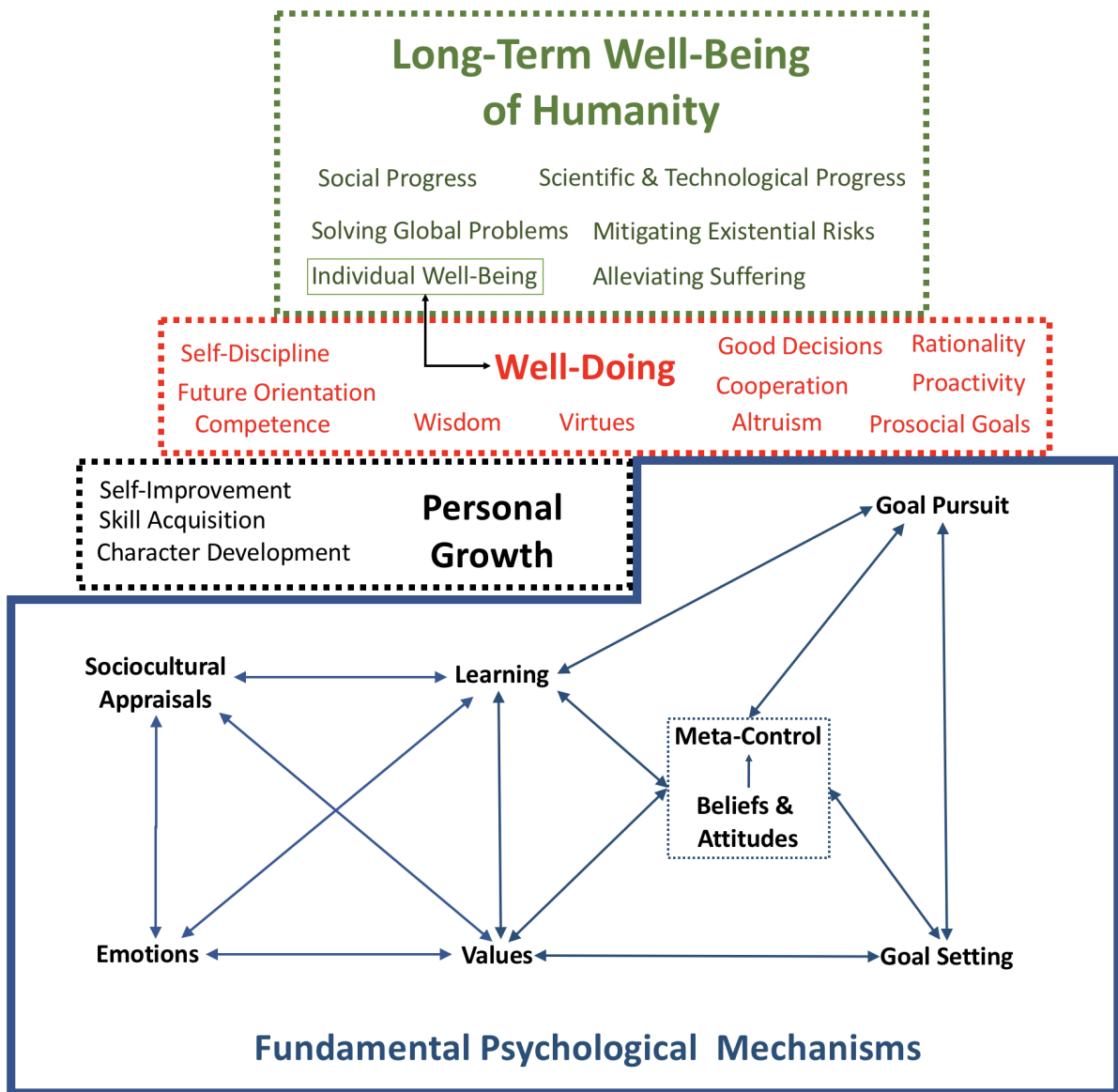
Figure 1: A conceptual model of well-doing based on our analysis of long-term well-doing and the SAVE model of prosocial behavior (Keltner, et al, 2014).

To effectively seize their tremendous opportunities to do good, people need not only prosocial values but also the ability to make sound decisions. Using reason and evidence to decide how to do the most good, which is known as *effective altruism* (MacAskill, 2015), can

enable people to have a substantially larger positive impact than relying on their intuitions and feelings alone (Bloom, 2017). Since many people think of effective altruism exclusively in terms of donating money to effective charities, we will refer to its broader meaning of using reason and evidence to do more good in better ways as *effective well-doing*. In many cases carrying out good deeds, such as providing medical treatment to underserved populations or simply helping a coworker, requires a number of additional competencies (Dudley & Cortina, 2008). Echoing this idea, the United Nations (UN) regards strengthening people's capabilities for bringing about positive change, including their competencies and *psychological abilities*, as a key entry point to achieving its sustainable development goals (Messerli et al., 2019).

Psychological science, cognitive science, and other behavioral sciences should, therefore, purposefully direct more research towards laying the scientific foundation for enabling and motivating people to do good. Finding ways to motivate and enable people to bring about positive change will require scientific insights into the motivational and cognitive mechanisms that govern whether someone does good or ill or remains complacent (see Figure 1).

Critically, it is not enough to know what people should do according to a theoretical criterion. To promote effective well-doing, we also have to find ways to help people realize their aspirations for personal growth and positive contribution. Understanding how we can foster prosocial values, encourage good intentions, and equip people with the skills and support they need to effectively realize those aspirations is a significant opportunity in our time. More progress in this direction might help us solve global problems and secure the flourishing of humanity in the long run. Thus, for the benefit of everyone, we should prioritize research that is relevant to promoting effective well-doing (see Figure 1).

There are many opportunities for well-doing that do not require individuals to sacrifice their own well-being. On the contrary, doing good for others tends to also further the well-doer's well-being at the same time (Aknin et al., 2018; Snippe et al., 2018; Weinstein & Ryan, 2010; Titova & Sheldon, 2021). It may even be that the feeling that one is doing good in the world is a primary or necessary source of identity and psychological thriving (Prentice, Jayawickreme, Hawkins, et al., 2019; Strohminger & Nichols, 2014). Consistent with these recent findings, Maslow (1958) postulated that people have a fundamental psychological need to actualize their potential to effectively contribute to the greater good. According to Maslow, the frustration of this need causes suffering once the more basic needs are sufficiently satisfied. Maslow believed that optimal human development culminates in people transcending their self-interest to prioritize making the world a better place but observed that 99% of the population never reach this level of psychological maturity (Maslow, 1987). Maslow described this widespread stunting of people's personal growth prior to reaching this level of psychological maturity as the *pathology of normalcy*. Maslow viewed the pathology of normalcy as a widespread mental health issue in need of a cure that psychologists have yet to develop. To help steer psychology towards curing the pathology of normalcy, Maslow proposed a number of questions for a new psychology that were being neglected at the time (Maslow, 1987). Recent work in multiple areas of psychology has begun to address Maslow's questions with rigorous empirical methods. This includes research on interventions for fostering the development of purpose (e.g., Bronk, et al., 2019), orienting people towards socially and individually beneficial goals (e.g., Sheldon, Corcoran, & Prentice, 2019) and values (e.g., Lekes, et al., 2012; Kasser, 2016), and helping people gain wisdom (e.g., Grossmann, et al., 2019). And it also includes basic research on moral learning (e.g., Cushman, Kumar, & Railton, 2017; Kohlberg, 1981; Eisenberg, Fabes, & Spinrad,

2007), character development (e.g., Damon, Menon, & Bronk, 2003), meaning and purpose (e.g.,

King & Hicks, 2021; Bronk, 2013; McKnight & Kashdan, 2009), autonomous agency (e.g., Ryan

& Deci, 2000; Sheldon, 2014), virtue (Fowers, Carroll, Leonhardt, & Crocklet, 2020), and

well-doing (e.g., Little, 2017; Sheldon, 2018).

Despite this initial progress, much more work remains to be done to establish the

psychological, sociological, and technological foundations for understanding and promoting

effective well-doing and personal growth (see Figure 1). This will require a multi-disciplinary

effort that transcends boundaries between psychology and other behavioral, technical,

philosophical, natural, and social sciences and boundaries between research and practice. We

propose calling this emerging transdisciplinary research field *life improvement science*.

Life improvement science is the interdisciplinary study of well-doing. In the following

sections, we discuss different types of well-doing and their mechanisms (Section 2), outline

which questions life improvement science should ask about well-doing (Section 3), and review

previous work relevant to those questions (Section 4). We conclude that life improvement

science is a highly effective way for behavioral scientists to contribute to the flourishing of

humanity (Sections 5-6).

2. Different types of (effective) well-doing and their mechanisms

To clarify the central topic of life improvement science, we will first elaborate on the

concept of well-doing and how it differs from related constructs.

2.1 Well-doing is a region on a moral continuum that includes ill-doing

Behaviors differ in how positively or how negatively they affect the total well-being of humanity in the long run. In the utilitarian framework (Driver, 2014) this social impact can be quantified by a single number. An action that has a negative net impact on the well-being of humanity would be assigned a negative number (e.g., -143.9) whereas an action with a positive net impact would be assigned a positive number (e.g., +12.5). In this framework, all actions with a positive net impact constitute well-doing. Conversely, actions with a negative net impact constitute *ill-doing*. From this perspective, the terms "well-doing" and "ill-doing" denote two adjacent regions of a continuum. These two regions are separated only by an infinitesimally thin line that corresponds to behavior whose impact is exactly 0. How close the net impact of a person's well-doing is to the highest net impact that was achievable in a given situation can be seen as a measure of its effectiveness. Effective well-doing could thus be conceptualized as the upper range of the well-doing continuum attainable in a given situation.

The idea of a moral continuum differs from folk theories of morality that treat "good" and "bad" as qualitatively different monolithic categories and emphasize the importance of being in the right category. By contrast, the utilitarian perspective suggests that we should be focusing on making the impact of our behavior more positive regardless of where it falls on the moral continuum. From this perspective, the impact of an intervention can be measured by how far up it moves how many people's behavior on the moral continuum. This means that large shifts within the categories of well-doing and ill-doing are more impactful than small shifts that traverse the boundary from ill-doing to well-doing.

2.2. Intentional well-doing versus unintentional well-doing and ill-doing

Some forms of well-doing and ill-doing are intentional; others are unintentional. We define *intentional well-doing* as socially beneficial actions that the person chose because they anticipated some of the positive effects. By contrast, *unintentional well-doing* comprises socially beneficial actions that were performed unintentionally or for reasons other than their positive social impact. Similarly, we define *intentional ill-doing* as harmful actions that a person chose intentionally because or despite of his or her anticipation of their harmful consequences and *unintentional ill-doing* as harmful actions that a person performed unintentionally or chose without anticipating their harmful consequences.

2.3. Proactive versus reactive well-doing

Well-doing is often initiated in reaction to a particular stimulus or event (e.g., in response to someone asking for help or in reaction to seeing someone suffer). We refer to this form of well-doing as *reactive well-doing*. However, people are also able to initiate well-doing independently of any stimuli in their immediate environment (e.g., when you ask yourself "What good deed do I want to do today?", make a plan, and then execute it). We refer to this form of well-doing as *proactive well-doing* (cf. Lieder & Iwama, 2021).

2.4. Momentary well-doing vs. long-term well-doing and personal growth

Well-doing can be pursued and analyzed on different time scales. *Momentary well-doing* comprises the good deeds that a person does on a day-to-day basis (e.g., comforting one's child or partner). Such good deeds have a direct and often immediate effect on the well-being of others. Although this is an important component of well-doing, there are other instances of

well-doing that people pursue over much longer timescales, such as studying politics and economics to eventually become a member of a parliament and convince the government to spend more money on effective developmental aid. A person's progress on such an important prosocial long-term project (e.g., mastering a key concept of the theory of economic development) often does not have any direct, let alone immediate, effects on the well-being of others even though it can be highly beneficial for humanity in the long run. We therefore refer to such forms of well-doing as *long-term well-doing*. The benefits of long-term well-doing are often more uncertain than those of momentary well-doing and this may be one of the factors deterring people from long-term well-doing.

As the example illustrates, long-term well-doing can include strategically developing one's capacities for doing good. We refer to the resulting improvements in a person's character, wisdom, knowledge, skills, cognitive abilities, or executive functions as *personal growth*.

2.5. Psychological functions underlying well-doing

The different kinds of well-doing described above rely on different psychological mechanisms. The mechanisms of reactive and momentary well-doing include sociocultural appraisals of the benefits for oneself and the person(s) and the costs of helping versus not helping, conformity to the norms and values of once social group, and emotional forces, such as compassion, empathy, (desire to avoid) guilt, and awe (Keltner, et al., 2014; Piff et al., 2015).

Proactive and long-term well-doing rely on a different set of psychological mechanisms than reactive, momentary well-doing. As illustrated in Figure 1, we postulate that the two primary psychological mechanisms of intentional, long-term well-doing are value-based goal-setting and goal pursuit, which includes motivation, planning, goal-directed

decision-making, and cognitive control. These processes can be initiated proactively or in response to cues. The mechanisms that govern whether, when, and how people engage in goal-setting and goal pursuit are known as meta-control (Lieder & Iwama, 2021). Rational models of meta-control (Shenhav, et al., 2017; Froemer, et al., 2020; Lieder & Iwama, 2021) suggest that such meta-control decisions might be informed by people's values, beliefs and attitudes about the effectiveness of cognitive control, goal-setting, goal-pursuit, and mental effort more generally.

2.6. Psychological functions underlying personal growth

The term "personal growth" refers to forms of psychological change that better a person's personality or character in a meaningful way (Vittersø, 2014). Since personal growth comprises a number of experience-driven improvements, we believe that theories of cognitive growth can be grounded in cognitive models of relevant forms of learning. Recent work suggests that the mechanisms of goal-pursuit, goal-setting, and meta-control are shaped by learning from experience (*metacognitive learning*; Lieder & Griffiths, 2017; Lieder, Shenhav, Musslick, & Griffiths, 2018; Krueger, Lieder, & Griffiths, 2017; Bustamante, Lieder, et al., 2021; Jain, Gupta, et al., 2019). Furthermore, our reading of the literature on values and value change (Schwartz, 2007; Bardi, et al., 2009; Schuster, Pinkowski, & Fischer, 2019) suggests that learning and meta-control decisions also shape people's values and how people prioritize them. In addition, recent work in cognitive science is beginning to shed light on how people learn the values and rules that govern their moral behavior (Cushman, Railton, & Kumar, 2017). We believe that these theories of learning are a promising starting point for understanding the mechanisms of

personal growth. A complete account of personal growth will also have to include that people set personal growth goals and pursue them intentionally.

2.7 Cognitive strategies of effective well-doing

Each of the cognitive functions underlying well-doing and personal growth can be realized through different cognitive strategies and mechanisms. For instance, it is well known that for most decisions a person faces there are many qualitatively different decision strategies that he or she could use to make that decision (Gigerenzer & Selten, 2002). We can therefore characterize a person's well-doing in terms of the cognitive strategies through which they arrived at the corresponding choice(s). Which strategies a person uses determines which thoughts they will have, which feelings they will experience, what they will learn, which values they will prioritize, which goals they will set, and which actions they will take. Which cognitive strategies a person uses is a critical determinant of whether they engage in well-doing and how effectively they do so. We therefore consider principled moral reasoning, gaining wisdom and forming accurate beliefs by applying sound reasoning to reliable information, rational decision-making in the service of the greater good to be essential components of effective well-doing. We further believe that to develop these capabilities people have to use adaptive learning strategies that are conducive to personal growth.

2.8. Relationship to similar constructs

Given that well-doing is fundamentally important for the flourishing of humanity, it should be no surprise that several facets of well-doing have already been studied and

conceptualized in previous work. In this subsection, we discuss how our notion of well-doing is related to the concepts of prosocial behavior, altruism, and moral behavior.

2.8.1. Prosocial behavior

The term "prosocial behavior" denotes behaviors that are "meant to protect or further the welfare of others" (Weinstein & Ryan, 2014). Although there are many behaviors that constitute both well-doing and prosocial behavior, there are instances of well-doing that do not meet the definition of prosocial behavior and vice versa. Instances of prosocial behavior that do not meet the definition of well-doing are actions that are intended to (and may succeed to) help one person but are detrimental for humanity at large. For instance, covering up a friend's misbehavior to protect them is prosocial behavior, even when that allows the harmful misbehavior to continue. Instances of well-doing that do not meet the above definition of prosocial behavior include unintentional well-doing and intentional well-doing directed towards benefiting the individual's own well-being or goals and values that are not directly about other people (e.g., to create knowledge).

Research on prosocial behavior focused on conventional interpersonal behaviors, such as helping, being kind, and cooperating, that are often driven by emotion (Keltner, et al., 2014). When these behaviors constitute well-doing, they are instances of reactive, momentary well-doing. Compared to effective altruism, the impact of such behaviors on the long-term well-being of humanity is often rather small (MacAskill, 2015). In this section, we have shown that there are other forms of well-doing that are proactive, directed towards impersonal long-term goals, unemotional, chosen through rational considerations, pursued in solitude, and more impactful.

2.8.2. Altruism

The term "altruism" is used to denote any behavior that benefits others in general and selfless behavior undertaken for the benefit of others in particular (Kraut, 2020). As with prosocial behavior, not all altruism is well-doing because altruistic behavior can have a negative net effect on the long-term well-being of humanity. Conversely, not all well-doing is altruism because well-doing can be undertaken for selfish motives or impersonal motives.

2.8.3. Moral behavior

Moral behavior, as a descriptive category, refers to behavior that conforms to the rules of conduct put forward by a society, a group, or the individual him- or herself (Gert & Gert, 2020). Depending on the moral rules and the situation in which they are applied, moral behavior can be beneficial, neutral, or harmful to the long term wellbeing of humanity. Therefore, moral behavior can be well-doing, ill-doing, or neither. Conversely, well-doing can be moral or immoral depending on whether it is demanded or forbidden by the code of conduct. But if the moral system were to always act in such a way as to bring about the greatest good for humanity, then all moral behavior would be well-doing.

2.8.4 Eudaimonic activities

The concept of "eudaimonia" originated from Aristotle's conception of what constitutes a good life for the person living it (Russell, 2014). According to Aristotle, a good life brings happiness by being personally meaningful, virtuous, and fulfilling. Activities that contribute to a person's happiness in this way are called eudaimonic activities (Martela & Sheldon, 2019). Many eudaimonic activities are prosocial (Aknin et al., 2018; Klein, 2017; Snippe et al., 2018) and are

intentionally pursued over extended periods of time (Little, 2014, 2017). This suggests that eudaimonic activities are a common form of intentional well-doing.

However, there is an important conceptual difference between eudaimonic activities and well-doing. Well-doing is defined by its consequences for the long-term well-being of all of humanity (including all future generations) whereas eudaimonic activities are defined by their effects on the well-being of the individual who pursues them. The prosocial components of human nature (Henrich & Muthukrishna, 2021) make it so that eudaimonic activities are often prosocial. But not all of the resulting prosocial behavior constitutes well-doing and only a tiny fraction of it constitutes effective well-doing (see Section 2.8.1).

We experience happiness when we do good in ways that benefit us, our families, and our community. But evolution certainly did not make our happiness contingent on doing the greatest good that they can do for the long-term flourishing of all of humanity (Burum, Nowak, & Hoffman, 2020). On the contrary, doing good *ineffectively* often feels better than doing good effectively (Caviola, Schubert, & Greene, in press; Bloom, 2017). For instance, going on a family vacation is fulfilling and meaningful for most people. But it is unlikely to constitute effective well-doing for a physician who could volunteer to save the lives of people wounded in one of the many ongoing armed conflicts in the developing world instead. Trying to save as many horribly mutilated casualties as possible and having to see many of them die might not make the physician particularly happy, but it would constitute effective well-doing. This highlights that promoting eudaimonia is not the same as promoting effective well-doing.

3. Which questions should life improvement science strive to answer about well-doing?

The flourishing of humanity depends on people's intentional well-doing and our ability to reduce *ill-doing*. Since the competencies required for effective well-doing have to be developed and refined through learning, life improvement science should additionally investigate personal growth. The questions that life improvement science seeks to answer can therefore be grouped into three categories: understanding and promoting effective well-doing (see questions I.1-I.14 in Box 1), understanding and promoting personal growth (see questions II.1-II.6 in Box 2), and reducing ill-doing (see questions III.1-III.3 in Box 3).

Understanding effective well-doing entails investigating what it would mean for people to realize their potentials for making the world a better place (I.1-2, I.7), characterizing well-doing in the real world (I.6, I.10), and identifying the underlying moral, cognitive, metacognitive, motivational, and affective mechanisms (I.3). Promoting and facilitating effective well-doing entails identifying the main obstacles to effective well-doing (I.10, I.11, I.13), investigating how people can overcome them (I.4, I.9), and finding ways to support them in doing so (I.4, I.5, I.8, I.9, I.12, I.14).

Understanding personal growth entails identifying the underlying cognitive functions, learning mechanisms, and behavioral strategies (II.1-3). Promoting personal growth entails facilitating self-improvement, cognitive growth, and moral learning (II.4-5) and helping people overcome the obstacles that stunt their growth (II.6).

Reducing ill-doing entails developing and evaluating interventions for reducing harmful behavior of individuals (III.1) and groups (III.2) and protecting young people and other vulnerable populations from the ill-doing of others (III.3). We believe that answering these

questions will establish a solid scientific foundation for promoting effective well-doing through psychological and educational interventions for individuals, groups, communities, and organizations, and apps that efficiently deliver those interventions to many people.

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Box 1: Foundational questions I: Effective well-doing

1. **How should people act to bring about the greatest good possible?**
   a. Which careers should people pursue to have the greatest positive impact?
   b. Which practical or intellectual problems should people work on and how?
   c. What should people do at different stages of their life to maximize their positive impact in the long run?
2. **What would the mind of an ideal well-doer look like?**
   a. How should people decide which goals to pursue and how to pursue them?
   b. How should people regulate their own behavior, motivation, thoughts, and emotion, and learning?
   c. Which cognitive strategies should people use to think well and arrive at sound judgments?
   d. Which values should people prioritize and how strongly?
   e. Which desires, motives, reasons, and ways of thinking and deciding are most virtuous?
3. **What are the psychological mechanisms of effective well-doing?**
   a. What are the main pathways to intentional and unintentional well-doing, respectively?
   b. What are the psychological underpinnings of altruism?
   c. What are the strategies and mechanisms that enable people to effectively live their values?
   d. What determines how effectively a person contributes to good causes?
   e. What are the mechanisms of value-driven goal setting, ii) goal pursuit, iii) problem-solving, iv) meta-control, and iv) proactivity?
4. **Which recommendations should we give people to promote effective well-doing?**
5. **How can we help people choose and prioritize socially and personally beneficial values?**
6. **How can we investigate well-doing in the real world?**
   a. How can we measure i) an action's or a person's positive impact on the world, ii) the quality of a person's (altruistic) values, and iii) how effectively people live their values?
   b. What is the purpose and causal structure of different components of human life (e.g., socializing, having a career, getting an education, starting a family, etc.)?
7. **What is the optimal balance between i) caring for oneself versus others, ii) investing into the present versus the future, iii) learning and personal development versus exploiting existing skills?**
8. **How can we help people (learn to) translate their values into goals, plans, and actions?**
9. **How can people most effectively help each other live better lives? How can we foster cooperation and effective collaboration?**
10. **How does people's actual behavior compare to ideal well-doing? Which aspects of people's well-doing have the most room for improvement?**
11. **Which biases and mindsets limit people's well-doing and how can they be overcome?**
12. **Which future technologies could have the greatest positive impact on effective well-doing and personal growth?**
    a. How can technology help to expand people's circle of concern towards a genuine caring for the long-term well-being of humanity and the biosphere?
    b. Which elements of well-doing should technology support?
    c. How can technology best promote cooperation, support collaboration, and foster human connection and belonging?
    c. How can intelligent apps enhance the effectiveness or accessibility of psychotherapy?
    d. How can AI and HCI research enable such technologies?
13. **How do socio-cultural factors help or hinder effective well-doing and how can they be improved?**
14. **How can we efficiently improve oppressed people's living conditions so that their basic needs are met well enough that they can more easily engage in effective well-doing.**

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3.1 Life improvement science should prioritize useful normative and prescriptive questions about values, goals, and strategies.

We can organize the questions of life improvement science along two dimensions. The first dimension distinguishes between descriptive, normative, and prescriptive questions. Normative theories define optimal well-doing by the actions (I.1), values, goals, motives, and mental strategies (I.2) that are most conducive to the collective, long-term well-being of humanity. They specify ideals that may never be attained in practice. Prescriptive theories, by contrast, identify pragmatic recommendations that help people do more good in better ways (I.4). Descriptive theories strive to characterize how people actually live and identify the underlying psychological mechanisms, including the mechanisms of well-doing (I.3) and the learning mechanisms through which positive psychological change can be achieved (II.2). The second dimension distinguishes between function and mechanism (Marr, 1982). Investigating the function of a cognitive system entails answering the questions "What is the problem that this system tries to solve?", "Why does it solve this problem?", and "What is the optimal solution to that problem?". Studying the underlying mechanisms means identifying the general logic of how the cognitive system solves that problem (I.2). Marr advocated determining the function of a cognitive system before investigating its mechanisms. Applied to well-doing, this means we should first identify the purpose of well-doing, understand the causal structure of the pursuits people can engage in to do good (I.6), and derive what optimal well-doing would look like. We should then leverage this understanding to identify which mechanisms would be required to generate such behavior (I.2) and use those mechanisms as hypotheses about the human mind.

Testing these hypotheses will help us discover which psychological mechanisms drive people's well-doing (I.3). Combining these two dimensions yields six different types of questions that we can ask about well-doing (see Table 1).

Table 1: Matrix of the six different types of questions about well-doing with examples

	Normative	Prescriptive	Descriptive
Function	Which goals and values would lead people to do the greatest good possible?	Which pragmatic advice can we give people to direct them towards more socially-beneficial pursuits?	What are people actually striving for?
Mechanism	Which strategies for goal setting, goal-pursuit, reasoning, and decision-making would lead to the greatest well-doing?	Which strategies should we recommend to people to pragmatically increase their well-doing?	Which strategies do people use to navigate their lives and learn from their experience?

Although most scientific research only asks descriptive questions, answering normative and prescriptive questions is essential for achieving the goals of life improvement science (i.e., understanding and promoting effective well-doing). When life improvement science does ask descriptive questions (e.g., I.3, II.2-6, II.6-8), this should serve to find better ways to promote effective well-doing by improving the mind, augmenting the mind, or designing environments that are more conducive to effective well-doing. To us, approaching research with the goal to make the greatest possible positive contribution to the well-doing of humanity implies that life improvement science should primarily focus on the computational and the algorithmic level of analysis. Life improvement science should not be constrained to topics and approaches that are popular, familiar, easy, and convenient (I.6). Instead, we should have the courage to ask fundamental, practically relevant questions about promoting effective well-doing, fostering optimal personal development, and reducing ill-doing. New questions sometimes require new

methods. We should therefore be prepared to expand our methodological repertoire, leverage old methods in novel ways, and develop new methods as necessary.

3.2 What are the best ways to do good for the world?

Answering normative questions about well-doing at the computational level of analysis (see Table 1) means identifying the greatest good that an individual, group, or organization could possibly do and how they should act to accomplish it (I.1). Ideals are rarely attained in practice. This raises two interesting descriptive questions about how people's lives compare to these ideals (I.10): "How does people's well-doing stack up against the greatest positive impact that they could have on the world?" and "When and how do the different choices that people make in various types of situations deviate from what would be best for the flourishing of humanity?"

3.3 What are the psychological mechanisms of effective well-doing?

Answering normative questions about well-doing at the algorithmic level of analysis (I.2 and I.3) means analyzing what the minds of ideal well-doers would be like (e.g., "Which intellectual virtues do they have?"), which strategies they use (e.g., "How would they decide which goals to pursue and how to pursue them?"), and how they lead and manage themselves. This includes understanding how people can choose socially and individually beneficial values, set good goals, improve their lives, and make valuable contributions in terms of the underlying moral, cognitive, metacognitive, motivational, and affective mechanisms (I.3). To fully answer normative questions about well-doing at the algorithmic level of analysis we would have to identify the optimal psychological mechanisms for these abilities (I.2). Descriptive questions about well-doing concern how flesh-and-blood human beings really learn, choose and prioritize

their values, set goals, (learn how to) pursue them, and decide how to decide (I.3, II.2). Answering these questions will establish a scientific foundation for promoting effective well-doing.

3.4 What are the most effective ways to foster effective well-doing?

To lay the scientific foundation for promoting effective well-doing, life improvement science should investigate how we can best help people make valuable contributions to society (I.4-5), improve themselves (II.4), and help each other (I.9). This includes asking a wide range of questions about giving advice (I.4), designing interventions (I.5, I.8, II.4, II.6, I.11-14), and creating tools and educational resources (I.12) that help people gain wisdom, strengthen their moral character and (meta)cognitive skills II.4), and overcome psychological obstacles to effective well-doing (II.6). To do this well, we should investigate how we can motivate and support positive change (I.4-I.5, I.8-9, I.12-14). This includes questions such as "How can we help people choose and prioritize socially and personally beneficial values?" and "How can we help people (learn to) translate their values into goals, plans, and actions?". Life improvement science should also investigate how artificial intelligence can be leveraged to help people set better goals, find better plans, and make better decisions. Furthermore, we can ask which aspects of mentoring, counseling, psychotherapy, and coaching can be effectively emulated or enhanced by digital companions (I.12), and how digital companions can help people to learn from their experience, continuously improve themselves, become more altruistic, and gain valuable life skills (II.4).

3.5 Which sociocultural factors influence well-doing and how can we improve them?

Sociocultural factors can foster or inhibit effective well-doing (I.13). Studying individual and cultural differences in well-doing may yield insights into which formal and informal social and cultural factors are the greatest facilitators or obstacles to effective well-doing. These factors may include rules, norms, values, attitudes, expectations, beliefs, relationships, incentives, and social and organizational structures. Some of those factors may be easier to change than others. Therefore, we should try to identify which (preferably small) changes individuals, families, groups, organizations, institutions, and governments can make to remove significant obstacles to effective well-doing and take active steps to promote it.

3.6 What are the mechanisms of optimal personal development?

Life improvement science should also investigate how people can develop the capacity and motivation to engage in effective well-doing through personal growth. This includes developing a theory of optimal personal development and understanding personal growth (II.1) in terms of the underlying mechanisms of moral learning (Cushman, Kumar, & Railton, 2017), personality change, value change, and metacognitive learning (II.2). In addition, life improvement science should investigate how people can intentionally foster their personal development by setting personal development goals and pursuing them deliberately.

3.7 What are the primary obstacles to effective well-doing?

Life improvement science should identify the primary obstacles that prevent people from effective well-doing. The most useful obstacles for interventions to focus on are those that can be most easily addressed by education, training, instructions, or tools. We should, therefore, ask questions such as "Which common obstacles to intentional well-doing can people overcome most easily?" and "What is the most cost-effective way to shift our cultural norms and values toward altruism?".

3.8 How can we reduce ill-doing?

Laying the scientific foundation for reducing ill-doing entails research on how we can reduce the ill-doing of individuals (III.1) and groups (III.2). The quest to reduce ill-doing entails addressing the situational factors (III.1a), early life experience (III.1b), and personal factors that contribute to ill-doing (III.1c). Research on reducing the ill-doing of large groups should address oppression (III.2a) and inter-group conflict (III.2b).

Box 3: Foundational questions III: How can we reduce ill-doing?

1. How can we reduce the ill-doing of individuals?

  a. Which cultural norms, rules, and policies should we add, remove, or modify to decrease the prevalence of situations and experiences that direct people towards malevolence?

     i. How can we establish strong cultural norms, rules, and policies against psychological abuse that accurately reflect the severity of the resulting damage?

     ii. What should our cultures and societies do to reign in the dark side of human nature?

     iii. What can be done to counter bystanders' tendency to ignore, deny, trivialize, or rationalize the ill-doing of others (e.g., by blaming the victim) instead of taking action to stop it?

  b. How can we raise and educate children to minimize risk factors for later ill-doing?

     i. How and why do dispositions towards engaging in ill-doing develop?

     ii. What are the most effective socio-cultural and psychological interventions for preventing child maltreatment and neglect?

     iii. What are the most effective ways to reduce bullying and other forms of psychological and physical abuse of and by children and adolescents?

     iv. What psychological and educational requirements should all parents meet to raise children well?

     v. How can we change our social norms, rules, beliefs, policies, laws, and expectations so that bullying and other forms of psychological and physical aggression by children are no longer ignored, accepted, and tolerated by adults?

  c. What are the most effective educational and psychological interventions for achieving large-scale reductions in psychological abuse in the long-run?

2. How can we reduce ill-doing of large groups of people?

  a. What are the most effective ways to reduce social, institutional, and economic oppression?

  b. What are the most effective socio-cultural, psychological, and technological interventions for preventing or ameliorating inter-group conflicts?

4. Multidisciplinary approaches to life improvement science: what is already known and what is still missing?

Given that the questions of life improvement science concern the flourishing of humanity, it should come as no surprise that many scholars have been independently drawn to them since the beginning of human civilization. These researchers are currently scattered across many different areas of psychology and other disciplines and have approached individual questions from many different perspectives with little interdisciplinary crosstalk and without an integrative theoretical framework. In this section, we give a brief overview of previous and ongoing efforts to answer these important questions (Boxes 1-3). Our goal is to identify what is (un)known and make researchers interested in effective well-doing aware of relevant work in other fields. While this section gives only a brief overview here, the Supplementary Information (SI) introduces various fields working on these questions in more detail.

4.1. Well-doing

So far, questions about what constitutes (effective) well-doing (I.1-I.8) have been primarily studied in the fields of moral philosophy (e.g., Campbell, 2019; Gert & Gert, 2020; SI S1), effective altruism (e.g., MacAskill, 2015, 2019; SI S2), and positive psychology (e.g., Martela & Sheldon, 2019; Sheldon, 2018; ; SI S3), as well as in research on wisdom (e.g., Baltes & Smith, 2008; Grossmann et al., 2020; SI S4), rationality (e.g., Edwards, 1954; Neumann et al., 1953; SI S5), and motivation (Ryan, 2013; SI S6). Research in moral philosophy has developed criteria for discerning good actions from bad actions and offers prescriptions for how to live a good life. Its most prominent frameworks are consequentialism, according to which people should strive to maximize the positive consequences of their actions (Sinnott-Armstrong, 2019;

I.1), deontology, according to which people should follow moral rules (Alexander & Moore, 2016), and virtue ethics, according to which people should cultivate their capacity for thinking and feeling in the right ways and applying it to do good across all situations (Hursthouse & Pettigrove, 2018; I.2). Research in wisdom scholarship has concluded that people should engage in perspective-taking and metacognition in the service of their moral values (Grossmann et al., 2020; I.2).

Theoretical research on rationality has derived principles of good reasoning under certainty (i.e., logic; Suppes, 1957) and uncertainty (i.e., probability theory, Jaynes, 2003) and rules for how to make good decisions (i.e., Bayesian decision theory; Harsanyi, 1978) that people should follow to think virtuously and decide to do the right thing (from a utilitarian perspective). Research on bounded rationality has found that people's limited time and bounded cognitive resources make it impossible for them to follow the norms of traditional notions of rationality (Gilovich, Griffin, & Kahneman, 2002). Subsequent work derived more realistic norms that respect those bounds (Lieder, 2018; Lieder & Griffiths, 2020; I.2). Effective altruism applies principles of rational decision-making to determine what people should do to have the greatest possible positive impact on the world (MacAskill, 2017; I.1, I.6). This includes determining which charities one should donate to, which good causes one should prioritize, and which career one should pursue (MacAskill, 2015, 2019; Todd, 2016). Research on the psychology of effective altruism (Caviola, Schubert, & Greene, in press) investigates what prevents people from giving effectively (I.10, I.11), and how those barriers can be overcome (I.4).

Research in positive psychology and motivation science has empirically investigated how different motives and pursuits affect people's well-being (I.1, I.7). From our perspective, a few of the most important findings are that well-doing promotes well-being (Aknin et al., 2018;

Klein, 2017; Snippe et al., 2018; I.7) whereas striving for materialistic goals like having great wealth, being attractive, and wielding social power decreases well-being and contributes to ill-being in the form of stress, anxiety, and depression (Kasser, 2002; Martela, Bradshaw, & Ryan, 2019; Niemiec et al., 2009). Furthermore, people's well-being greatly benefits when they pursue their goals for intrinsic reasons (e.g., as an expression of their personal identity or because they are convinced that something is important) rather than for extrinsic reasons (e.g., because somebody else asked them to do it, because they feel that it is expected of them, or because they would feel guilty if they did not pursue it) or without any significant motivation (Sheldon, 2014; Sheldon & Elliot, 1999; I.7, I.2). Future research should extend the analysis of what constitutes effective well-doing to a wide range of real-world situations (I.6) and aspects of life (including personal development; II.3-5, I.7-I.8) and identify effective ways of thinking and decision-making that enable people to do more good in better ways (I.2).

There are many psychological obstacles that stand in the way of effective well-doing (Caviola, Schubert, & Greene, in press; II.6). One of these obstacles is that motivated reasoning (Kunda, 1990) often leads people to construct irrational excuses for letting other people suffer rather than helping them, such as believing that everyone who suffers must have done something bad to deserve it (Bénabou & Tirole, 2006; Furnham, 2003). People are also held back by inflated views of how good they are (C. Miller, 2017) and perceptions that others are more selfish than they are (Sanderson et al., 2019). Additional obstacles to effective well-doing might include underestimating one's ability to have a positive impact, failing to identify compelling opportunities for well-doing, and the misconception that doing good would require sacrificing one's own happiness.[2] Enabling people to overcome these and other obstacles to effective well-doing is an important goal for future research (II.6).

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[2] The opposite is true (Klein, 2017; MacFarquhar, 2015; Weinstein & Ryan, 2010).

Technological advances that could help to facilitate effective well-doing (I.12) occur rapidly. The design of new technologies is becoming increasingly more informed by empirical research on people's wants and needs (i.e., human-centered design; Bannon, 2011), theories of well-being (i.e., positive computing, Calvo & Peters, 2014), well-doing and motivation (i.e., eudaimonic design; Deterding, 2014; Szalma, 2014), and behavior change (Caraban et al., 2019; Consolvo et al., 2009). Artificial intelligence can be used to develop cognitive prostheses that help people overcome cognitive impairments (Voss et al., 2019) and motivational bottlenecks (Lieder et al., 2019). This makes us optimistic that insights into how effective well-doing can be promoted and supported can be translated into socially beneficial technologies (I.12).

4.2 Promoting well-doing by fostering personal growth

As reviewed by Vittersø (2014), the concept of personal growth has been originally developed in philosophy and humanistic psychology and several conceptual theories of personal growth have been put forward since then. Several of these theories conceptualize personal growth as the successful pursuit of personal change goals. Two common targets of personal change goals are improvements in how one thinks about oneself and others and improvements in how one feels about the world, oneself, and others (Bauer & Adams, 2004). Other targets of personal change goals include improving one's personality (Hudson, 2021), moral character (Thielmann & de Vries, 2021), (meta)cognitive skills (Strobach & Karbach, 2016), knowledge, intellectual abilities, and academic performance (Dweck, 2000), and one's wisdom and virtues (Staudinger & Glück, 2011; Staudinger & Kunzmann, 2005). Staudinger and colleagues distinguish between two types of personal growth: i) adapting oneself to one's current environment, and ii) seeking out and mastering new challenges (Staudinger & Kunzmann, 2005).

It has been argued that personal growth is an important component of psychological well-being (Ryff, 1989), that people's needs for competence and autonomy provide intrinsic motivation for personal growth (Ryan & Deci, 2020), and that people learn the fastest when they experience an optimal balance between being challenged and feeling competent (Csikszentmihalyi, 1997).

Fostering well-doing (I.4-I.13) through personal growth (II.1-II.6) has been primarily studied in the fields of behavior change (Michie, 2005; SI S7), value change (Grube et al., 1994; Schuster et al., 2019), character education and moral development (Kristjánsson, 2014; SI S8), psychotherapy (SI S9), coaching (Passmore, 2015; SI S10), humanistic-existential psychology (May, 1969; SI S11), intentional personality change (Hudson et al., 2020; SI S7), cognitive training (Sala & Gobet, 2019; SI S12), judgment and decision-making (Kahneman & Tversky, 2000; SI S5), wisdom scholarship (Grossmann et al., 2020; SI S4), human-centered design (Bannon, 2011; SI S13), and positive computing (Calvo & Peters, 2014; SI S13). This research has identified promising approaches to enabling people to do more good. Research on behavior change has identified a number of interventions that can promote socially and individually beneficial behavior (cf., e.g., Jackson, 2005). These interventions include making the desirable behavior easier to choose and perform than its undesirable alternatives (Ajzen, 1991), social influence techniques (Petty & Cacioppo, 1986), and helping people resolve their ambivalence about a desirable behavior change by interviewing them about their motivation to change and their reasons for resisting the change (W. R. Miller & Rollnick, 1992). While behavior change techniques target specific behaviors, other approaches aim for broader changes, such as improving a person's character (I.5-4, II.5). Research on volitional personality change has demonstrated that people can shift their personality towards desirable traits by deliberately enacting behaviors that exemplify the desired trait over the course of several weeks (Hudson et

al., 2020). People can also volitionally change their value profiles toward more prosocial ones (Sheldon, Corcoran, et al., 2019). Positive personal change can be further enhanced by effective psychotherapeutic techniques, including cognitive behavior therapy (Fenn & Byrne, 2013), acceptance commitment therapy (Hayes et al., 2011), and humanistic-experiential psychotherapies (Elliott et al., 2013, 2020). Many techniques of these therapies are not only effective in clinical settings but can also foster the personal development of typical and high-functioning individuals through coaching (Ducharme, 2004; Jones et al., 2016; Kearns et al., 2007; Stober, 2006; Theeboom et al., 2014). Furthermore, there are effective self-help resources that make many of these techniques widely accessible (Fitzpatrick et al., 2017; Greenberger & Padesky, 2015; Hayes, 2019; Proudfoot et al., 2004). By contrast, meta-analyses of studies on cognitive training have concluded that while exercising one's cognitive abilities improves performance on the trained exercises and similar tasks, those improvements rarely (if ever) transfer to dissimilar tasks that require the general cognitive abilities that the exercises were meant to improve (Sala & Gobet, 2017, 2019; but see Bediou et al., 2018). Research on rationality has similarly found that while people can be taught to apply the rational principles of logic, probability theory, and decision theory to textbook problems the transfer of these skills to judgment and decision-making in the real-world is rather limited (Larrick, 2004). By contrast, recent research on wisdom suggests that wise reasoning *can* be trained (Grossmann et al., 2019); II.5). Along the lines of wisdom, recent scholarship has identified promising educational methods for fostering virtues (Lamb et al., 2021) and provided preliminary empirical support for their effectiveness (Lamb & Prentice, 2019).

Encouragingly, technology is increasingly being used to support personal growth; examples include mobile apps that make psychotherapy more accessible (Fitzpatrick et al., 2017;

Liu et al., 2018), behavior change apps (Eckerstorfer et al., 2018; Zhao et al., 2016),

self-improvement apps (Roepke et al., 2015), Wikipedia, and massive open online courses

(Gaebel, 2014; Rodriguez, 2012).

4.3 Ill-doing

Questions about what can be done to reduce ill-doing (III.1-III.3) have been primarily

studied in social and personality psychology, sociology, clinical psychology, criminology,

economics, and public/international policy (Dye & Dye, 1992). Many approaches to reducing

ill-doing can be roughly divided into approaches that focus on situational causes of ill-doing

(situational approaches) versus qualities of individuals that dispose them to engage in ill-doing

under certain circumstances (dispositional and/or interactionist approaches, cf. Furr & Funder,

2018). In terms of situational approaches, social psychological and sociological theories have led

to the development of norm-based interventions that attempt to provide information that shifts

people's perceptions of what their in-group typically values. People often conform with the

resulting norms because they are motivated not to stand out on a negatively evaluated dimension.

These interventions have been successfully applied to reducing many forms of ill-doing,

including bullying, high energy consumption, sexual aggression, and the consumption of harmful

or addictive substances (see Miller & D. Prentice, 2016 for a review; III.3, III.1). Situation-based

interventions have also been developed to improve environmental conditions in ways that reduce

antisocial behavior, for instance by alleviating frustrations of basic psychological needs (e.g.,

Cheon et al., 2018). Other effective situational interventions include educating bystanders about

the importance of stepping in when they notice signs of ill-doing (Banyard et al., 2004, 2007;

Katz & Moore, 2013; III.3), and developing social accountability (Lerner & Tetlock, 1999) and

sanction structures (Noussair & Tucker, 2005). Related to situational efforts, top-down policy changes can be employed to reduce ill-doing, as in introducing regulations to slow the loss of coral reefs and reduce violence against women and girls (Lomborg, 2015).

Dispositional approaches can provide insights into predictors of antisocial behavior and help reduce ill-doing in the following three ways.[3] First, it can be used to reduce risk factors of ill-doing through training and treatment (III.1). For instance, one dispositional predictor of ill-doing is the tendency to impulsively act on one's unexamined interpretations of frustrating situations. This tendency can be overcome by applying self-regulatory strategies that can be taught. This makes teaching those strategies to the underprivileged youth who might need them most a promising approach to preventing ill-doing (III.1). Underlining the promise of this approach, three randomized controlled trials by Heller and colleagues (2017) found that teaching economically disadvantaged youth to respond to frustrating situations by stopping themselves from responding impulsively and considering whether there might be a more adaptive way to interpret and respond to the situation significantly reduced violent crime arrests by 45-50%. This is a compelling demonstration of the benefits of fostering cognitive growth. Further supporting the potential of fostering personal growth, a meta-analysis found that an earlier program that combines teaching prison inmates cognitive, metacognitive, interpersonal skills, and moral values relevant to handling challenging situations reduces criminal recidivism by about 14% (Tong & Farrington, 2006; III.1). Second, a dispositional perspective can point to opportunities for eliminating environmental factors that produce long-term dispositions for ill-doing (III.1-2).

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[3] Certain forms of dispositionalism have been used to argue for the irredeemability of individuals and groups (D. King, 1999). Policies built from such perspectives persist. For example, essentialist dispositional and eugenicist thought contributed to the carceral system in the United States (Appleman, 2018). Although such a system is ostensibly about the reduction of ill-doing, it often makes communities and social circumstances more conducive to violence and crime (Clear, 2009). One challenge moving forward, both in this domain and generally, is to bring public policy in line with best scientific understandings of causes of ill-doing; this includes educating research communities, the public, and policy-makers (e.g., Steinberg, 2012; Steinberg & Scott, 2010).

One example of this approach comes in the form of understanding that individual differences, such as proneness to anxiety and oppositional personality, are key ingredients for aggressive religious radicalization and violence when combined with life frustrations and opportunities to join morally absolutist or conspiracy-fueled groups (McGregor et al., 2015). One way to eliminate factors that drive the formation of dispositions conducive to ill-doing and create frustrations that drive ill-doing could be to provide public education on the ill effects of authoritarian parenting and the importance of supporting basic psychological needs during development (Joussemet et al., 2008; III.1b). Third, knowing that certain dispositions, such as pedophilia, psychopathy, narcissism, sadism, and Machiavellianism, are risk factors for specific forms of ill-doing (Moshagen et al., 2018) suggest that we should not unnecessarily put people with dangerously high levels of those traits into situations that might bring out the worst in them or negligently grant them the power to do great harm (O'Boyle et al., 2012).

A common feature of some of the most effective interventions appears to be that they provide constructive alternatives for better behavior, better decision-making , or personal growth. This suggests that future work should continue to leverage insights into the psychological mechanisms and situational facilitators of personal growth and well-doing as a starting point for reducing ill-doing. For instance, approaches such as value change (Grube et al., 1994), wisdom training (Grossmann et al., 2019), character education (Lamb & Prentice, 2019), and intentional personality change (Hudson et al., 2020), could be applied to reduce risk factors for ill-doing such as narcissism, psychopathy, and Machiavellianism (III.1). Understanding how problematic dispositions develop and how we might prevent and redirect their development are two additional frontiers for future research (III.1). These sorts of bottom-up approaches can be complemented by top-down approaches that target bottlenecks to effective well-doing. For

example, economic systems and the metrics they attempt to maximize can be re-oriented such that they are more conducive to effective well-doing and the reduction of ill-doing (cf. Kasser et al., 2007; Stiglitz, 2019).

5. Life improvement science is a form of effective altruism

The mission of life improvement science is closely aligned with the goals of effective altruism. Life improvement science can support effective altruism in at least four ways: i) finding ways to help people adopt and prioritize the values of effective altruism, ii) understanding what motivates people to engage in effective altruistic actions, iii) developing interventions and tools that support effective altruism, and iv) identifying which conditions are most conducive to human flourishing.

Future research on promoting the values of effective altruism can build on several effective value change interventions and theories of the underlying mechanisms (e.g., Grube et al., 1994; Schuster et al., 2019). Efforts to promote effective giving (Caviola, Schubert, & Greene, in press) can build on research on discovering and teaching effective decision strategies (Lieder et al., 2019; Skirzynski, Becker, & Lieder, 2021; Kemtur, et al., 2020; Callaway et al., under review; Hertwig & Grüne-Yanoff, 2021). This approach could also be used to help aspiring effective altruists make better career choices and more rational decisions about how to do the most good.

The dispositional, social, and situational factors that motivate effective altruism can be elucidated by studying the Effective Altruism community and its philanthropic activities with methods from sociology and social and personality psychology, as has been done with other forms of moral exemplarity (e.g., Frimer et al., 2012; Walker et al., 2010).

The question of what we can do to sustainably increase people's well-being has been already extensively studied in positive psychology (e.g., Lyubomirsky et al., 2005; Reis et al., 2010; Sheldon et al., 2019; Sheldon & Kasser, 2001; Sin & Lyubomirsky, 2009; Tay & Diener, 2011; Weinstein & Ryan, 2010). Most studies were conducted in rich countries. But Tay and Diener (2011) found that the well-being of poor people in rural areas of the developing world is governed by the same universal needs and psychological principles. Some findings of positive psychology might thus be useful for increasing well-being in poor countries. But differences in need-satisfaction and opportunity should be taken into account. Future research should therefore leverage the methods and findings of positive psychology to identify which acts of well-doing we can undertake to improve the long-term well-being of people living in poverty as efficiently as possible. Efforts to improve well-being directly should be complemented by efforts to increase people's well-being indirectly by promoting and supporting effective well-doing. In this way, we can help people help each other and feel better as a result of it (Aknin et al., 2018; Snippe et al., 2018; Weinstein & Ryan, 2010; Titova & Sheldon, 2021). Life improvement science should lay the scientific and technological foundations for doing this as effectively as possible.

To contribute to effective altruism as effectively as possible, future research should prioritize scientific questions and practical problems according to how much their answers and solutions might benefit humanity in the long run, how difficult it is to make progress on them, and how neglected they are by other fields, perhaps in ways akin to proposed "smart" approaches to the UN's sustainable development goals (Lomborg, 2015). In doing so, research on effective well-doing can address important psychological topics, such as value change, effective goal pursuit, and character development that are currently neglected in the Effective Altruism community.

We believe that life improvement science is one of the most effective ways for psychologists, cognitive scientists, and other behavioral scientists to contribute to the greater good. The argument for life improvement science is simple. Its insights will make it possible to increase the quantity and quality of the effective altruism of future generations and thereby further all other causes of Effective Altruism. In the long-run, the increase in the quality and quantity of other people's effective altruism will outweigh the value of the contributions that people who choose to conduct research on effective well-doing could have made by working directly on other causes.

6. Conclusion

Laying the scientific foundations for promoting effective well-doing, fostering personal growth, and reducing ill-doing is an extremely important, meaningful, and timely endeavor. Recent advances have made questions about well-doing more amenable to rigorous scientific research than they have ever been. This presents unprecedented opportunities for psychology, cognitive science, and neighboring disciplines to have a profound positive impact on the lives of millions of people, emerging technologies, and the future of humanity. We invite everyone who resonates with the vision of life improvement science, including scientists from all disciplines and practitioners who help people grow, thrive, and do good, to come together as a community to investigate the psychological, technological, and socio-cultural foundations of well-doing. In doing so, we will establish life improvement as an important research area within our respective disciplines and as a transdisciplinary research field in its own right. We are fueled by hope and

optimism that – together – we can answer fundamental questions about how to empower people to thrive and make the world a better place.

Supplementary Material

The Supplementary Material can be found at

Acknowledgments

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