Greater Good Science Center

The Science of Generosity

White paper prepared for the John Templeton Foundation by the Greater Good Science Center at UC Berkeley

Executive Summary

Generosity comes in many forms, from charitable donations to formal volunteering to helping a stranger to caring for a spouse or a child. What these and other examples have in common is that they involve "giving good things to others freely and abundantly"—the definition of generosity according to the University of Notre Dame's Science of Generosity Project. When they are generous, people (and sometimes animals) prioritize the needs of others, often above their own.

But where does this generosity come from? What are the benefits that result from helping others? And how can generosity be further cultivated within individuals and in society as a whole? These questions have motivated studies from fields as diverse as economics, neuroscience, psychology, sociology, and ecology; their key findings and insights are the focus of this paper, which pays special attention to the role that research funded by the John Templeton Foundation has played in advancing this science of generosity.

The roots of generosity

Humans are a generous species.

That statement seems to fly in the face of decades of research—and centuries of conventional wisdom—equating "human nature" with selfishness and aggression. Yet in recent years, a more complex and nuanced understanding of human nature has emerged. While studies no doubt suggest that humans have a propensity for self-interest—and these studies have drawn understandable attention—research has revealed that currents of generosity also run deep through us.

Indeed, generosity has its roots not just in our individual development but also in our very biology and evolutionary history. Species as diverse as bees, birds, vampire bats, rats, and chimpanzees all exhibit forms of generosity, or what can be broadly described as "prosocial behavior"—acts that benefit others. The broad occurrence of generosity across species suggests that generosity may be an evolutionary adaptation that has helped promote the survival of these species—and our own.

And sure enough, a host of studies have uncovered evidence that humans are biologically wired for generosity. Acting generously activates the same reward pathway that is

activated by sex and food, a correlation that may help to explain why giving and helping feel good, as well as provide further evidence for the idea that prosocial activity has been an important evolutionary adaptation.

Further evidence of the deep roots of human generosity comes from studies finding consistent displays of generosity among young children—even young toddlers. Multiple studies have shown that children appear to have an innate drive to cooperate and to help others, but that this drive is tempered as children grow older and their giving behavior becomes more selective and nuanced.

Positive effects on givers

Many studies point to the possible positive consequences of generosity for the giver. Giving social support—time, effort, or goods—is associated with better overall health in older adults, and volunteering is associated with delayed mortality.

Generosity appears to have especially strong associations with psychological health and well-being. For example, a meta-analysis of 37 studies of older adults found that those who volunteered reported greater quality of life; another study found that frequent helpers reported feeling greater vitality and self-esteem (but only if they chose to help of their own accord).

Other studies have shown a link between generosity and happiness. Some studies have found that people are happier when spending money on others than on themselves, and this happiness motivates them to be generous in the future. And even small acts of kindness, like picking up something someone else has dropped, make people feel happy. Generosity is also associated with benefits in the workplace, such as reducing the likelihood of job burnout, and in relationships, where it is associated with more contentment and longer-lasting romantic relationships.

Individual factors linked to generosity

There are several intrapersonal factors that can influence generosity. Feelings of empathy, compassion, and other emotions can motivate us to help others. Certain personality traits, such as humility and agreeableness, are associated with increased generosity, and a person's tendency to engage in prosocial behavior may be considered a personality trait in itself. A person's values, morals, and sense of identity can also modify how willingly they engage in generous acts. In addition, research suggests that gender and religion may influence generosity, although the findings from different studies have sometimes shown conflicting or nuanced results.

Social and cultural drivers

A host of social and cultural factors also influence generosity. Many studies suggest that people often act generously out of an expectation that their generosity will be reciprocated or because they feel it will help their reputation. A person's generosity is also influenced by

cultural norms, such as standards of fairness. Strong social networks may also influence generosity. For example, people with more friends engage in more volunteering, charitable giving, and blood donations. What's more, generosity is contagious; it can propagate within social networks and workplaces.

Other social and cultural drivers of generosity range widely. The influence of socioeconomic status on generosity is complex, with studies suggesting that both poorer and wealthier individuals are more generous, depending on the study and its context. The characteristics of a potential recipient of one's generosity also influence a person's decisions to give. For example, people are much more likely to help an identified, specific person rather than an abstract or anonymous individual, and they're more likely to help individuals than groups. Even where you live can influence your generosity, as both geographic and governmental factors have been associated with increased or decreased generosity.

And of course, parenting also plays a role in cultivating generosity. Some studies have found that various parenting practices—particularly role-modeling and discussing generosity—may help children grow up to be more generous adults. Other studies have found that engaging with media—including television, music, and videogames—that have prosocial messages may lead people to behave more generously.

Finally, other social or situational factors, such as the timing or setting of a request, can impact generosity. In one experiment, people were more generous when forced to make a decision quickly; another study found that seminary students were much less likely to stop to help a person in need when they were running late to give a speech than when they had plenty of time. Natural settings may inspire generosity—one study even found that people behaved more generously in a room filled with plants than they did in a room without them.

Future research

Clearly, the science of generosity is a broad and complex topic, and there are several promising avenues of future exploration. Those include developing interventions to increase people's empathy—and, thus, their generosity—toward others, more rigorous studies about the health benefits of volunteering, and practical methods for increasing charitable donations.

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I. Introduction

Americans gave a record $390 billion to charitable organizations in 2016 through a combination of individual giving and philanthropy from estates, corporations, and foundations (Giving USA, 2017), although giving as a percentage of household disposable income has hovered around two percent for decades (Crary, 2017).

Roughly a quarter of Americans volunteered for religious, public, and nonprofit organizations, contributing an estimated $193 billion worth of their time to their communities in 2016 (National Philanthropic Trust, 2016). But the percentage of people who volunteer each year has been steadily decreasing over the past decade in the United States (Kiersz, 2016) and the United Kingdom (Office of National Statistics, 2017).

People demonstrate generosity in myriad other ways, from everyday acts of kindness toward loved ones to large acts of altruism, like donating a kidney to a stranger, though they are often not as generous as they could (or want) to be.

In short: People clearly have the capacity to be generous, but they don't always act on this capacity.

What are the biological, psychological, and social factors that encourage people to give time, money, and helpfulness? What effects does generosity have on their well-being? What accounts for differences in individual levels of generosity—and what methods could encourage them to give more? Are there science-based strategies for developing generosity as an individual virtue? These questions, among many others, have given rise to the hundreds of studies covered by this white paper.

This paper presents an overview of research on the science of generosity, predominantly focusing on studies from the past 20 years. While concentrating on studies from psychology (especially developmental and social psychology), it covers research from a wide range of academic disciplines, including economics, ecology, neuroscience, sociology, and religious studies, among others. And it conveys the extent to which support from the John Templeton Foundation has contributed to some of the most influential findings in this field.

It primarily draws on studies that have been highly cited (>50 citations). The number of citations for a paper (as of July 2017) is indicated in brackets [ ] next to that citation; highly cited studies are in **bold**. Citations of studies conducted by researchers who have, at one time or another, received grants from the John Templeton Foundation are shown in blue (thus highly cited JTF-funded studies are shown with **bolded blue** citations).

A few caveats should be kept in mind while reading this paper:

1. While the paper attempts to present an overview of the most active areas of research on the science of generosity, it is not entirely comprehensive. Several

topics related to "the science of generosity" are touched upon only briefly in this paper or not included at all, particularly in regard to different forms of philanthropy (such as levels of giving by foundations and corporations). Our intention is to focus on the subfields that most strongly relate to the research that has been funded by JTF. Additionally, not all studies related to a particular topic are cited; we have primarily focused on highly cited studies and those funded by JTF.

2. How frequently studies have been cited can differ by academic discipline, subfield, and publication date. In some research areas, researchers typically publish many articles each year while in others they may only publish a few. Studies in fields where researchers publish papers frequently, such as biology, are more likely to have higher citation counts than studies from a field, such as economics, where researchers generally publish less frequently. Thus determining whether a particular study has been influential requires considering the context of its publication, such as its field and the year it was published.

3. Additionally, while this paper focuses on the strongest findings related to the science of generosity, some of the findings it cites stem from single studies, particularly studies funded by JTF. Results from a single study, especially studies with small numbers of participants, should be considered with caution **(Ioannidis, 2005**) **[5037] (Marszalek, Barber, Kohlhart, & Cooper, 2011) [75]**. Attempts to replicate some findings from psychology **(Klein et al., 2014) [309](Open Science Collaboration, 2015) [1278]** and experimental economics **(Camerer et al., 2016) [101]** have failed, casting some doubt on the validity of these findings; however, the extent to which these findings were not actually replicated **(Gilbert, King, Pettigrew, & Wilson, 2016) [126]** **(C. J. Anderson et al., 2016) [127]** (Patil, Peng, & Leek, 2016) [17] and the reasons for the lack of reproducibility (Etz & Vandekerckhove, 2016) [43] have been subjects of debate and discussion. As much as possible, this paper will discuss findings that have been replicated or generally supported by multiple different studies. This includes meta-analyses that combine data across multiple experiments and reanalyze these data. However, because a main goal of this white paper is to give a sense of the breadth of research on generosity to date, particularly that which has been supported by JTF, findings have not been omitted simply because they have not yet been replicated; instead, some of these studies have been included to suggest new possibilities and directions in the research. When these findings have been supported by only a single study so far, we have tried to make that clear within the text.

The paper is divided into six main sections. The first section briefly defines generosity. The second builds on this definition by exploring generosity's origins and functions, discussing the deep evolutionary, biological, and developmental roots of human generosity. The third section discusses the consequences of generosity, including its benefits to health, happiness, and relationships. The fourth section focuses on the individual factors that may influence a person's propensity to act generously, while the fifth section focuses on the social and cultural factors that may elicit or dampen a person's generous impulses. The

final section outlines promising future directions in the science of generosity, along with limitations to this research.

II. What is Generosity?

Before delving into the research, we must first identify what we mean by "the science of generosity." Generosity can mean different things to different people and in different contexts, and it is generally not a term used by researchers in most of the academic disciplines listed above (they prefer constructs such as "altruism" and "prosocial behavior," both of which are defined in the next paragraph). For the purposes of this paper, we will use the definition from the University of Notre Dame's Science of Generosity Project, which defines generosity as "the virtue of giving good things to others freely and abundantly. … What exactly generosity gives can be various things: money, possessions, time, attention, aid, encouragement, emotional availability, and more" (Science of Generosity Initiative, 2012).

Under the umbrella of this rather 'generous' definition of "generosity," this paper focuses on generally recognized forms of generosity, such as charitable giving and volunteering, as well as other scientifically defined—and sometimes overlapping—phenomena. These include: general helping behavior; cooperative behavior, which is defined by Yale University cooperation researcher David Rand as when "one individual pays a cost for another to receive a benefit"**(Rand & Nowak, 2013) [401]**; altruism, which has a particularly slippery definition depending on the subfield, but is generally viewed as "a motivational state with the ultimate goal of increasing another's welfare" **(Batson & Shaw, 1991) [886]**; and "prosocial behavior," which also has varying definitions but can be considered as "a broad category of acts that are defined by some significant segment of society and/or one's social group as generally beneficial to other people" **(Penner, Dovidio, Piliavin, & Schroeder, 2005) [1221]**.

Though this paper covers a wide range of scientific disciplines and concepts, of course it cannot cover all lines of research related to generosity—it does not delve much into corporate giving, for example. Instead we strive to present a broad overview of the state of the research on generosity as an individual virtue that can be cultivated, as seen through the lens of the some of the most influential studies across a host of disciplines.

III.The Deep Roots of Human Generosity

Though researchers debate the extent to which humans are innately generous, a great deal of research strongly suggests that generosity has deep evolutionary, biological, and developmental roots in humans, as will be discussed in this section. As a whole, this research suggests that far from being frivolous or superfluous, human generosity might be deeply embedded in human behavior and play a vital role in our personal well-being and survival as a species.

A. The Evolutionary Roots of Generosity

Are people naturally generous, or are we inherently selfish? While many assume that selfishness is our "true" nature, research has called that assumption into question. This is not to suggest that generosity is more "natural" than selfishness; rather, evidence suggests that humans have *both* selfish and generous propensities. In other words, generosity is not simply a cultural construct. While our selfish instincts may get more attention, numerous studies have shown that our instincts for generosity also have deep evolutionary roots.

Indeed, humans are not the only species to act in ways that benefit others. Examples abound. Army ants, bees, and fish are known for their impressive cooperative behaviors. Sparrow-like pied flycatchers will join in risky mobbing behavior to drive away a predator from another, non-relative bird—but won't do so to help selfish birds who had defected from a previous mob **(Krams, Krama, Igaune, & Mand, 2008) [123]**. And vampire bats will reciprocally share blood with both related and unrelated bats, preventing bats who have unsuccessful hunts from starving to death **(Wilkinson, 1984) [937]**. This evidence of generosity in other species suggests that prosocial behavior may in fact be an evolutionary adaptation that has promoted the survival of our (and other) species.

Additionally, some have argued that some non-human animals experience forms of empathy that drive various prosocial behaviors (Decety, Bartal, Uzefovsky, & Knafo-noam, 2015) [32]. Rats, for example, will actively perform behaviors to alleviate a fellow rat's distress. And then there are the uber generous eusocial insects like ants and bees who sacrifice their own reproductive potential to help raise the offspring of others **(Nowak, Tarnita, & Wilson, 2010) [804]**.

But much of the research on generosity in animals has focused on non-human primates **(de Waal & Suchak, 2010) [115]**. So, too, will this section.

Non-human primates

Primate studies suggest that human generosity should not necessarily be attributed solely to humans' advanced cognitive abilities. A study of common marmoset monkeys—a species with relatively poor cognitive abilities—found that they will spontaneously provide food to unrelated monkeys, even if those monkeys don't reciprocate, indicating that advanced

cognitive abilities are not required for animals to show consideration of a peer's welfare **(Burkart, Fehr, Efferson, & van Schaik, 2007) [321]**.

A study of brown capuchin monkeys found that when monkeys were given a choice to be selfish (by exchanging a token for a personal food reward) or prosocial (by exchanging a different token that would result in equal food rewards for the monkey and a partner monkey), they predominantly made the prosocial choice. This suggests that these monkeys found that choosing the more generous option provided added value—most likely the pleasure derived from seeing another monkey receive food. In accordance with this theory, monkeys were less likely to choose the prosocial outcome when the partner monkey was out of sight **(de Waal, Leimgruber, & Greenberg, 2008) [218]**.

Chimpanzees, as one of human's closest living relatives, have been of great interest when it comes to studying generosity. In some studies, chimpanzees appeared to be guided purely by self-interest and failed to deliver food to another chimpanzee when given the opportunity, even when giving food required no personal cost **(Silk et al., 2005) [512] (Jensen, Hare, Call, & Tomasello, 2006) [329]**. However, in other studies, chimps have shown altruistic tendencies **(Warneken & Tomasello, 2006) [994] (Melis et al., 2011) [109]**. In one study, chimpanzees helped an unfamiliar human without receiving a reward, even when they had to exert physical effort to help **(Warneken, Hare, Melis, Hanus, & Tomasello, 2007) [399]**. Another experiment in this study showed that chimpanzees were willing to learn a new skill in order to help an unrelated chimpanzee gain access to food. And in yet another study, chimpanzees helped other chimpanzees complete a task to obtain a food reward, even when they themselves had already received their reward **(Greenberg, Hamann, Warneken, & Tomasello, 2010) [56]**. Importantly, the chimpanzees did this helping automatically and voluntarily, without any form of solicitation or request by the chimpanzee they were helping. Bonobos may be even more generous than chimpanzees; experiments have found that they will spontaneously help bonobos from other groups, even when helping means they have to forego some of their own food or time spent playing with a toy **(J. Tan & Hare, 2013) [82]**(J. Tan, Ariely, & Hare, 2017) [0].

While these studies suggest that chimpanzees and bonobos show a propensity for some forms of generosity, there are other forms of generosity that appear to be uniquely human, including what might be humans' most extreme form of generosity: anonymous giving—of money, time, and even organs—that supports strangers they will never meet. Other animals may be generous, but this kind of generosity has yet to be observed in any non-human species. We will explore nuances of anonymous giving later in this paper.

Why might have humans evolved to be generous?

There have been a number of theories for ways that evolution has motivated generosity in humans and other species. These include reciprocal altruism (I'll help you now, so you'll help me later), kin selection (individuals altruistically help relatives to insure the survival of their shared DNA), group selection (natural selection could select for non-kin altruism if it helped the survival or reproductive success of the entire group), and multilevel selection ("a unified theory of natural selection that operates on a nested hierarchy of units," like

Russian dolls, and which posits that natural selection can simultaneously work both on individual organisms and on group organisms, such as a group of humans) **(Pennisi, 2005) [206] (Sober & Wilson, 1994) [1021]**.

Culture has also been recognized as an evolutionary force, and some groups theorize that many human behaviors, including prosocial behaviors, may have resulted from gene-culture coevolution **(Henrich & Henrich, 2006) [143]**. This idea suggests that societies that have promoted prosocial norms would have had higher survival rates than those that do not.

Indeed, some theorists have suggest that altruistic behavior was necessary for creating the cooperative social systems that allowed early humans to thrive. In fact, a generous spirit—even among children—may have been necessary for their very survival. One paper presents an evolutionary model, structured in part on observations from traditional societies, that suggests these societies may have relied on help from children—like carrying water, collecting and chopping firewood, foraging and processing food—for adult subsistence (Warneken, 2015) [25]. Another paper shows evidence of a culture-dependent relationship between child helping and the number of children that can be supported in a family **(Kramer, 2005) [245]**.

Our species' early dependence on cooperation and helping one another may help explain why giving feels rewarding, much like other acts such as eating, drinking, and mating that are essential for the continuation of the human species. As psychology researcher Lara Aknin and her colleagues suggest: "If the capacity for generosity favored survival in our evolutionary past, it is possible that engaging in generous behavior might produce consistent, positive feelings across diverse cultural contexts—akin to the pleasurable feelings associated with other adaptive behaviors such as eating and sexual intercourse" **(Aknin, Barrington-Leigh, et al., 2013) [279]**. In other words, because generosity may have contributed to humans' fitness for survival, when generosity produced pleasurable feelings in certain humans—and thus made those humans more likely to be generous again—they thereby became the ones who were more likely to survive.

Reproduction likely also played a role in the evolution of human prosociality. "Costly signaling theory" suggests that people sometimes act altruistically not because they expect direct reciprocation (although that is also a motivation) but in order to develop a positive reputation that could lead to gaining allies or mates down the road **(Smith & Bird, 2000) [448]**.

In fact, research suggests that being more prosocial does make people more attractive as romantic partners and that sexual selection may have played a role in the evolution of human generosity. A study of undergraduate students found that "prosocial men were rated as more physically and sexually attractive, socially desirable, and desirable as dates than were nonprosocial men" **(Jensen-Campbell, Graziano, & West, 1995) [244]**. And another study found that altruistic people were considered more desirable long-term mates, and women also preferred altruists for single dates, though men did not show a preference there **(Barclay, 2010) [104]**.

Further support for the theory that generosity may have evolved as a mating signal—at least in men—comes from a study that found that men were more generous in their charity contributions when in the presence of a potential mate (there was no effect for women) **(Iredale, Van Vugt, & Dunbar, 2008) [159]**. Another study found evidence for "competitive helping" in public online fundraising pages: Male donors gave more money when responding to an attractive female fundraiser and when following a large donation given by another man; they gave about four times less money when the fundraiser was male or a less attractive female, or when their donation followed a large donation from a female donor (Raihani & Smith, 2015) [44]. Additionally, a recent study found that more altruistic people actually have higher mating success (more partners and more frequent sex within relationships) (Arnocky, Piche, Albert, Ouellette, & Barclay, 2016) [31].

B. The Biological Roots of Generosity

Research suggests that, thanks to evolution, humans are born with the biological "hardware" required for generosity. In particular, we have brain circuits and hormone systems in place and at the ready that help us help others—and make us feel good while doing so.

Brain structure and activity

There is growing evidence that the human brain is wired for generosity. Several studies have found evidence that when people help others, their brains show activity in fundamental neural circuits such as those that underlie parental caregiving **(Swain et al., 2012) [110]**. Acting generously also appears to stimulate the neural circuits involved in reward, the same circuits that are activated when we eat food or have sex, which helps to explain why giving feels good. This neural response is also a sign that generosity is important for survival—when an act feels good, we're more likely to do it again—and thus, thanks to evolution, the behaviors that are most fundamental to our survival also tend to make us feel good. For example, one study found that parts of the brain called the mesolimbic reward system, which are activated by stimuli like sex, drugs, food, and receiving money, are also engaged when people make charitable donations **(Moll et al., 2006) [728]**; what's more, in another study, participants' brains showed activity in reward-processing areas even when they were forced to give to others (although neural activity was even higher when they donated voluntarily) **(Harbaugh, Mayr, & Burghart, 2007) [762]** (Hubbard, Harbaugh, Srivastava, Degras, & Mayr, 2016) [5].

All that said, it's important to note that people behave generously for a number of reasons, not just because it feels good. Generosity doesn't just trigger our brains' caregiving and reward circuits; it also triggers a part of the brain called the orbitofrontal cortex, which not only activates when we receive rewards but is also thought to be involved in assessing the subjective value of our decisions. One study found that deciding to share equitably with another person activated the orbitofrontal cortex, suggesting that people find ensuring equity to be intrinsically rewarding even when fairness comes at a personal cost **(Zaki &**

Mitchell, 2011) [108]. These results suggest that our brains convert the subjective value of choices that would benefit ourselves and the subjective value of choices that would benefit others into a "common currency" that helps us decide when to act selfishly and when to act generously (Zaki, López, & Mitchell, 2014) [36].

Several studies have also shown that the brain's ability to empathize, particularly its capability to resonate with the pain and emotions of others, helps form the basis for our prosocial proclivities. For example, one study found that participants who showed greater signs of resonating with others when watching a video of a human hand being pierced with a syringe in a brain imaging part of the study tended to be more generous while later playing a game that involved distributing money between themselves and a stranger (Christov-Moore & Iacoboni, 2016) [4].

Indeed, research also shows that some people are more altruistic than others, and brain imaging studies have found relationships between activity in particular brain regions—such as the posterior superior temporal cortex (pSTC) **(Tankersley, Stowe, & Huettel, 2007) [208]** and the dorsomedial prefrontal cortex **(Waytz, Zaki, & Mitchell, 2012) [75]**—and a participant's propensity for altruism. In addition, a recent study found person-specific brain activity differences in three processes involved in altruistic-decision making, suggesting that individuals may vary in how they rely on these different processes—and the neural systems that underlie them—to make decisions that benefit others (Tusche, Bockler, Kanske, Trautwein, & Singer, 2016) [18]. And another study combined evidence from brain imaging experiments, psychological surveys, and economic games in support of a "General Benevolence" dimension that could explain individual differences in prosocial tendencies (interestingly, they also found that General Benevolence appeared to increase with age) (Hubbard et al., 2016) [5].

Extraordinary altruism may have its own neural hallmarks. In particular, one study found that people who had donated a kidney to a stranger were distinguishable from other participants via their larger right amygdala and the increased responsiveness of this brain region to fearful facial expressions **(Marsh et al., 2014) [73]**. While a single study, it is interesting to note that some of the anatomical and functional differences seen in these extreme altruists in this study are the opposite of those seen in psychopaths—who are characteristically callous and non-empathic—suggesting that, while human brains do appear to be wired for generosity, a person's biological proclivity toward generosity may exist on a continuum.

Hormones

A number of studies have linked certain hormones—testosterone and oxytocin, in particular—to both prosocial and antisocial behavior. The exact effects of these hormones on behavior appear to be variable across different individuals and in different contexts.

For example, in one study of male college students, some were given a dose of testosterone while others received a placebo **(Zak et al., 2009) [208]**. Then they had the opportunity to offer to share money with a stranger. The offers that the students in the testosterone group

made were, on average, less generous, and this effect scaled across testosterone levels—men with higher levels of testosterone (DHT) were less generous than the men with lower levels. Higher DHT was also associated with an increased likelihood that students would use their own money to punish game participants who were ungenerous toward them.

However, other studies using economic games have found that giving participants more testosterone decreased trust yet increased reciprocity **(Boksem et al., 2013) [74],** increased fair bargaining behavior **(Eisenegger, Naef, Snozzi, Heinrichs, & Fehr, 2010) [289]**, increased cooperation (but only in people with low levels of prenatal testosterone exposure) **(van Honk, Montoya, Bos, van Vugt, & Terburg, 2012) [90]**, or had no effect on economic behavior **(Zethraeus et al., 2009) [148]**. These findings suggest that testosterone likely plays a complex and context-dependent role in generous behavior.

Similar research discrepancies are seen in studies looking at the effects of oxytocin on generosity **(Bartz, Zaki, Bolger, & Ochsner, 2011) [847] [review]**. Oxytocin is a hormone and neuropeptide (a peptide hormone found in the brain) that is involved in a host of physiological functions, including childbirth and lactation. Research has shown that oxytocin also has wide-ranging effects on social behavior, from supporting maternal care to encouraging pair bonding. Oxytocin is also important for cervical dilation and contractions during birth, and administration can cause spontaneous miscarriage. This is why studies that involve giving extra oxytocin to subjects are done primarily, but not always, with men. In one such study, male students who were given a nasal spray of oxytocin (rather than a placebo) showed significantly more trust toward others in an investment game and transferred more money to others as well **(Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005) [3082]**.

Another study found that a spray of oxytocin did not impact how much money participants chose to give to a stranger during a "dictator game," a game in which they were given a set amount of money and told they could decide how much to keep and how much to give to another participant **(Zak, Stanton, & Ahmadi, 2007) [710]**. However, in an "ultimatum game"—a game where recipients could decide to reject an offer, which would result in neither the donor nor the recipient getting anything—donors who had received oxytocin were more generous than those who had received the placebo. A follow-up study found more evidence for this relationship: Participants who watched emotional video clips had an increase in oxytocin release and signficantly increased empathy, compared with their levels before watching the video, and the people who reported the greatest increased empathy levels were the most generous toward strangers in an ultimatum game **(Barraza & Zak, 2009) [266]**.

Oxytocin levels may also influence charitable donations. In one study, a dose of oxytocin did not increase the *percentage* of people who chose to donate to charity part of their earnings from a lab experiment, but it did increase the *amount* of money given by those who did decide to donate **(Barraza et al., 2011) [84]**. Another study found that participants who were given extra oxytocin before watching a series of public service announcments (PSAs), donated more money overall, donated to more causes, and reported more concern for the people in the PSAs (Lin et al., 2013) [16].

However, oxytocin's effects on prosocial behavior are not always so easy to interpret and are likely species dependent. In one study, when capuchin monkeys, which are naturally highly cooperative, received oxytocin, they spent less time congregating and sharing food than did monkeys given a placebo, possibly due to oxytocin's known anti-anxiety effects (the monkeys may have felt less stressed and safer being alone when given extra oxytocin and thus didn't seek out their peers for comfort as frequently) (Leverett et al., 2015) [11].

Other studies have shown that the effect of oxytocin on prosocial behavior is context-dependent. For example, one study found that oxytocin administration made participants more cooperative with a computer or with a person whom the participants found to be reliable, and less cooperative when they were presented with clues that a social partner was not trustworthy **(Mikolajczak et al., 2010) [213]**. Another found that oxytocin increased cooperation but only when participants had social information about their partner—when they had no prior contact with their partner, oxytocin actually decreased cooperation **(Declerck, Boone, & Kiyonari, 2010) [151]**. In fact, other studies have shown that oxytocin administration can have decidely antisocial effects—such as increasing envy and gloating **(Shamay-Tsoory et al., 2009) [332]** and making people more ethnocentric **(De Dreu, Greer, Van Kleef, Shalvi, & Handgraaf, 2011) [517]**. Indeed, one study even found that oxytocin *decreased* generosity by making people less sensitive to fairness-related social norms (Radke & de Bruijn, 2012) [42].

Genetics

A person's natural tendency toward generosity may depend, in part, on their genetic background. Results from studies of twins suggest that the tendency to exhibit prosocial behavior is either moderately or considerably heritable **(Rushton, Fulker, Neale, Nias, & Eysenck, 1986) [676]** **(Knafo & Plomin, 2006) [201]** **(Cesarini, Dawes, Johannesson, Lichtenstein, & Wallace, 2009) [336]**. Interestingly, a twin study found evidence for a genetic predisposition toward volunteering for women but not for men (Son & Wilson, 2010) [26].

A recent study of seven-year-old twins found that participants' scores on any one of five different facets of prosociality—sharing, social concern, kindness, helping, and empathic concern—were highly correlated with their scores on the other four facets, suggesting that prosociality is a stable characteristic, much like other personality traits. This trait was also more similar in identical twins than in fraternal twins, again suggesting that it is heritable(Knafo-Noam, Uzefovsky, Israel, Davidov, & Zahn-Waxler, 2015) [23].

C. The Developmental Roots of Generosity

Research conducted over the past few decades provides strong evidence of intrinsic generous behaviors in children. This evidence suggests that generosity is deeply rooted in human psychology—that the instinct to help others is at least partially innate and not

purely the product of social and cultural conditioning. Indeed, some research suggests that these instincts are may be strongest when we are young and that they are actually moderated throughout childhood.

Generosity in toddlers

When it comes to humans, generosity starts at a very young age **(Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992) [1220]** (Warneken, 2016) [2]. Toddlers as young as 14 months old will help others with a variety of problems, such as by handing objects to a person who is unsuccessfully trying to reach for them **(Warneken & Tomasello, 2007) [433] (Warneken & Tomasello, 2006) [997] (Warneken et al., 2007) [399]**. One study found that pairs of 18 to 24-month-olds will equally divide resources between themselves, even when one child has to sacrifice some of his or her own resources to ensure equality (Ulber, Hamann, & Tomasello, 2015) [11], while another found that toddlers between 21 and 31 months of age will proactively help out after an accident, for example by picking up an object that someone else has dropped without noticing (Warneken, 2013) [45].

A study of 24-month-old children found that they will help an unfamiliar adult regardless of parental presence or encouragement, suggesting that the drive to help is intrinsically motivated **(Warneken & Tomasello, 2013a) [59]**. And a study of 18- and 30-month olds found that children of both ages voluntarily engaged in instrumental helping (such as helping an experimenter reach a clothespin that is out of reach), empathic helping (such as giving a cold experimenter a blanket or giving a sad experimenter a toy), and altruistic helping (such as handing over the child's own blanket to a cold experimenter or the child's favorite toy to a sad experimenter), although the 30-month-old children, who were better able to understand other people's emotional cues, engaged in all forms of helping earlier and with less communication than did the 18-month-old children **(Svetlova, Nichols, & Brownell, 2010) [311]**.

This all serves as evidence of the deep proclivity in young children toward generosity; research shows that even very subtle nudges can generate a strong prosocial response. A study of 18-month-olds, for example, found that after viewing photographs that had two dolls facing each other in the background of the images, they were three times more likely to help an experimenter pick up sticks than were children who had viewed photographs with a lone doll or dolls standing back-to-back in the background **(Over & Carpenter, 2009) [131]** (This finding was replicated in undergraduate students (Rubin, 2011) [6]).

A different study found that 18-month-old children who were mimicked in a friendly manner by an adult experimenter were significantly more likely to help either that experimenter or a different adult who needed help compared to children whose behavior was not copied **(Carpenter, Uebel, & Tomasello, 2013) [71]**. And another study found that 18-month-olds and 25-month-olds both offered more help toward an emotionless adult victim who had had her possessions taken away or destroyed compared to an actor who had not been harmed, suggesting that sympathy may help motivate prosocial behavior in even very young children **(Vaish, Carpenter, & Tomasello, 2009) [316]**.

Generosity in older children

Studies of older children suggest how context and developmental stage influence this seemingly inherent drive to help others. Three-year-olds will mostly share their rewards from a collaborative task equally, even when they could have taken more for themselves **(Warneken, Lohse, Melis, & Tomasello, 2011) [129]**, but share less equally when rewards came from a windfall or a task they completed on their own **(Hamann, Warneken, Greenberg, & Tomasello, 2011) [171]**. For three-year-old children, previous sharing by a partner led to more sharing with that partner later, but for two year olds a partner's previous sharing had no impact on their later sharing (Warneken & Tomasello, 2013b) [34]. Five year olds, but not three year olds, increased the amount they shared with someone who they thought might reciprocate their generosity (Sebastián-Enesco & Warneken, 2015) [14]. Collectively these studies suggest that even relatively early in human development, children's generosity is influenced by contextual factors that become more nuanced as children get older.

Variations in prosocial behavior among children

Recent work has sought to determine which genetic differences may underlie differences in prosocial behaviors among children. For example, particular genetic variants of the oxytocin receptor are associated with greater social cognition in 18-month-old children (Wade, Hoffmann, Wigg, & Jenkins, 2014) [17], more helping and comforting (but not sharing) in three to five year olds (Wu & Su, 2015) [22], greater emotional empathy in adults **(Uzefovsky et al., 2015) [57]**, and greater empathic concern and perspective taking in college students (Christ, Carlo, & Stoltenberg, 2016) [18]. However, a meta-analysis of two commonly studied oxytocin receptor variants failed to find any significant association between either of these variants and personality or social behavior **(Bakermans-Kranenburg & van IJzendoorn, 2014) [103]**, while another meta-analysis found one of the variants was associated with general sociality (J. Li et al., 2015) [34]. Thus it is likely too early to definitively say that there is a relationship between any particular oxytocin receptor variant and prosocial behavior.

Preschoolers with a particular variant of a different gene, the arginine vasopressin receptor 1A, a hormone involved in various social behaviors, showed a lower proclivity toward altruistic behavior in a modified dictator game **(Avinun et al., 2011) [60]** in one study. And variations in the dopamine receptor D4 gene have been associated with differences in cognitive empathy (our ability to identify and understand other people's emotions, which includes perspective taking) and self-initiated prosocial behavior—and these differences were influenced by gender and parenting, respectively (Uzefovsky et al., 2014) [17] **(Knafo, Israel, & Ebstein, 2011) [140]**.

Ongoing research is attempting to tease out the various roles of genetic and environmental factors implicated in prosocial behavior, as well as the interactions between and among these factors. One study looking at helping behavior in three-and-a-half-year old twins found that genetics may account for 34-53 percent of the variation in prosocial behavior and that overall there was no correlation between certain parenting factors—maternal

positivity, negativity, and unexplained punishment—and a child's prosocial behavior **(Knafo et al., 2011) [140]**.

However, when taking genetics into account, the role of parenting appears murkier. For example, for children carrying a particular variant of the dopamine receptor D4, positive parenting was associated with more mother-rated prosocial behavior by the child. Further complicating the picture is evidence suggesting that a child's prosociality may itself influence how he or she is parented: Parents are, in general, nicer, warmer, and more responsive to their more prosocial children **(Knafo & Plomin, 2006) [201]**, and this influence appears to be dependent on the parents' own genetic makeups as well (Avinun & Knafo-Noam, 2017) [0]. Together, these results suggest that an individual child's propensity to behave more or less generously is dependent on both nature and nurture factors, as well as the complex interactions among these factors.

These studies point to particular genetic variants that may influence various forms of prosocial behavior among children (and adults). However, it should be noted that, as far as we know, researchers have not yet performed a genome-wide association study (GWAS) to identify potential genetic markers for prosocial behavior. These types of studies provide more statistical power than the candidate gene studies mentioned above because they involve tens to hundreds of thousands of participants, and they are the current gold standard experiment for behavioral genetics. More than likely, the genetic basis for prosocial behavior will turn out to be quite complex, as has been shown to be the case for other traits, such as educational achievement **(Rietveld et al., 2013) [375]**.

IV. Consequences of Generosity

Beyond making people feel rewarded and increasing their chance of landing a mate, generosity seems to provide many other positive benefits for the giver. Studies suggest that these benefits include better physical and psychological health

A. Physical Health

A number of studies have looked at how different forms of generosity may impact a person's physical health and longevity.

General health

A randomized controlled pilot study of 113 mostly female, mostly African-American, mostly low-income people in Baltimore tested whether routine volunteering could be used to increase physical activity in older adults **(E. J. Tan, Xue, Li, Carlson, & Fried, 2006)[95]**. While there was an overall trend toward increased physical activity among the people assigned to volunteer, the difference was not statistically significant. However, among the participants who had reported low physical activity levels at the beginning of the study, those who volunteered increased their activity level by an average of 110 percent whereas the non-volunteers had only a 12 percent increase. These results suggest that volunteering may be a good way to increase physical activity in older adults who are primarily inactive—and physical activity is, of course, linked to better health.

Another study of 1,118 ethnically diverse older adults from Brooklyn, New York, found that giving social support (any giving that had costs, including time, effort, or goods) was associated with better overall health, as measured by a survey that asked about participants' blood pressure, hearing, sleep quality, and other conditions **(Brown, Consedine, & Magai, 2005) [183]**. This association persisted after controlling for functional mobility, which could influence a person's ability to provide social support. The effect, while relatively modest, was constant across ethnicities, despite the observation that social network characteristics were different between different ethnic groups. This study also showed that more generous people had better health outcomes regardless of the social support that they received in turn. Another study—this time of Presbyterian teens in the United States—found that female teens who reported helping their families more had better physical health (although this association was not found among male teens) **(Schwartz, Keyl, Marcum, & Bode, 2009) [88]**.

However, results from a longitudinal study of 154,970 respondents across Europe found that while volunteering was associated with greater self-reported health—this was mostly due to the fact that healthier people were more likely to volunteer. By analyzing differences in changes in health between non-volunteers who started to volunteer, volunteers who stopped volunteering, and people who volunteered the whole study period, the researchers determined that "changes in volunteering are associated with a 2% change in subjective health at best." (A De Wit, Bekkers, Karamat, & Verkaik, 2015) [3].

Mortality

A study that analyzed data from a nationally representative sample of 1,211 Americans over the age of 65 found that volunteering was associated with delayed death. Any volunteering was associated with delayed mortality as long as it was less than 40 hours a week and for not more than one organization. The researchers hypothesize that the strain that could come from a more intense volunteer commitment might counteract the benefit—and the commitment to a single organization might strengthen it **(Musick, Herzog, & House, 1999) [555]**.

Another study looking at the association between volunteering and mortality in older Californians showed somewhat different results. This study found that people who had volunteered for two or more organizations were 63 percent less likely to have died during the five year study period than were people who hadn't volunteered **(Oman, Thoresen, & Mcmahon, 1999) [376]**.

A recent study followed 308,733 married couples (including 100,571 volunteers) for 33 months (O'Reilly, Rosato, Moriarty, & Leavey, 2017) [1]. It examined whether spouses of people who volunteered were less likely to die during that time even if the spouses themselves had not volunteered, something that would be expected if the health benefits previously associated with volunteering are actually due to certain household or behavioral characteristics, not the act of volunteering itself. This study found that volunteers were generally richer, more religious, and better educated than non-volunteers, and they also had a lower mortality risk. However, the non-volunteer spouses of volunteers did not show a lower mortality risk, despite the household characteristics they shared with their volunteer spouse. This is further evidence that volunteering may have a causal relationship with delayed death.

When it comes to generosity and health, it really may be better to give than to receive. A study of patients with end-stage renal disease found that those who gave more social support—be it through social interaction, material aid, advising, or emotional support—to friends and family were significantly less likely to die over a 12-month period, whereas those who *received* social support were no more or less likely to die **(McClellan, Stanwyck, & Anson, 1993) [102]**.

Another study looked at the effects of giving and receiving emotional support (such as making their spouse feel loved and cared for or listening to them when they needed to talk) and instrumental support (such as help with transportation, child care, housework, etc.) on mortality among older married couples from the Detroit area. After controlling for a number of variables, including the health of the participants, the researchers found that people who reported providing more emotional support to their spouse and/or instrumental support to friends, relatives, and neighbors had a significantly reduced death rate during the five-year study period, compared with those people who had reported offering less support **(S. L. Brown, Nesse, Vinokur, & Smith, 2003) [887]**.

The motives that inspire older adults to choose to volunteer may impact the volunteers' mortality risk, according to one study. This study used data from a random sample of 10,317 Wisconsin high school graduates who were tracked from their 1957 graduation until the present day. In 2004, survey respondents were asked about how regularly they had volunteered during the last 10 years. They were also asked to rate their motives for volunteering, which included self-oriented motives (such as "Volunteering is a good escape from my own troubles") and other-orientated motives (such as "I feel compassion toward people in need"). The researchers then compared these data with 2008 mortality data. They found that while people who cited self-oriented motives for their volunteering had a similar mortality risk to non-volunteers, volunteers who cited other-oriented motives had a lower mortality risk. This could be evidence that people who volunteer for more altruistic reasons may live longer, possibly by activating something the researchers call a "caregiving behavioral system, a suite of cognitions, emotions, and underlying neurological and psychophysiological circuitry that motivates various forms of helping behavior" and also "deactivates helpers' stress responses"**(Konrath, Fuhrel-Forbis, Lou, & Brown, 2012) [146]**.

In accordance with this idea, a longitudinal study of 846 people from the Detroit, Michigan, area found that helping others may act as a buffer between stress and death **(Poulin, Brown, Dillard, & Smith, 2013) [59]**. In this study, people were asked whether they had experienced a number of highly stressful events over the previous year, as well as whether or not they had provided tangible help to friends or family members. The cohort was tracked for the next five years to determine which of the participants died in this time period (and when). The researchers found that people who experienced highly stressful events had a significantly greater chance of dying over the five years—but only if they did not report helping others. However, for those who provided help to others, this connection was nullified. While this was a nonexperimental study which cannot be used to prove causality (other factors may underlie the relationship between generosity and mortality), and the findings may not generalize to other populations, these results suggest that helping others may act as stress-relieving buffer—which may, in turn, delay severe health problems and death.

Mechanism

How exactly might volunteering or offering social support improve health outcomes and delay death? A limited amount of research to date has explored this question in depth. One very recent study looked into potential mechanisms at the molecular level (Nelson-Coffey, Fritz, Lyubomirsky, & Cole, 2017) [1]. In this study, researchers randomly assigned 159 adults to engage in activities that benefitted specific other people, activities that benefitted the world in general, activities that benefitted themselves, or a neutral control task (keeping track of their regular day-to-day activities) for four weeks. The researchers looked at whether there were changes in the expression of genes involved in what has been termed the "conserved transcriptional response to adversity" (CTRA) in white blood cells.

CTRA is characterized by an increased expression of genes involved in wound-healing and decreased expression of genes involved in fighting off viral infections. While this biological

response may help in times of acute stress—like after an attack from an animal—over-activation of this response invoked by prolonged stress may increase people's risk of developing inflammatory diseases, like rheumatoid arthritis or cardiovascular disease. Thus, CTRA gene expression may be involved in the connection between negative psychological and social events and negative health outcomes.

This study was the first to examine whether prosocial behavior could counteract CTRA gene expression. The researchers found that there was indeed a reduction in the expression of CTRA indicator genes—and therefore a possible reduction in the risk of developing inflammatory diseases—but only in the group that was assigned to engage in generous acts toward specific others; acts that benefitted themselves or the world at large didn't seem to help. While this study did not examine actual health outcomes, its findings suggest one potential mechanism connecting generous actions and health benefits.

Volunteering as treatment?

Is the evidence clear enough for doctors to recommend public service as a health intervention? According to a meta-analysis of 29 studies, the answer is: maybe **(Jenkinson et al., 2013) [120]**. This analysis determined that while there is observational evidence that volunteering has positive benefits for mental health and delaying death, the paucity of randomized controlled trials makes it difficult to determine what the causal mechanism is and whether or not prescribing volunteering as a therapeutic treatment would be effective. The authors suggest that carefully designed randomized controlled trials should be performed to test this possibility.

B. Psychological Health and Well-Being

There is an extensive and growing body of evidence suggesting that acts of generosity are associated with reduced psychological problems and greater subjective well-being, which is a person's emotional and cognitive sense of the quality of their life. Whether generosity actually *causes* this better mental health is a more complicated question, though some research does suggest that it does.

A meta-analysis of 37 observational (non-experimental) studies published between 1968 and 1994 found that 70 percent of older volunteers reported a greater quality of life than did non-volunteers, even after controlling for the possible confounding influence of socioeconomic or health status; those who engaged in face-to-face volunteering appeared to derive the most benefit **(Wheeler, Gorey, & Greenblatt, 1998)[320]**.

Other studies suggest that similar benefits may extend beyond formal volunteering to the forms of generosity we supply to our loved ones. A study of 2016 Presbyterian church members from across the United States found that both helping others (via making them feel loved and cared for, or listening to them) and receiving help were associated with better mental health **(Schwartz, Meisenhelder, Ma, & Reed, 2003) [316]**. Giving help was a stronger predictor of better mental health, but only in manageable doses: Feeling overwhelmed by the demands of other people was associated with poorer health.

Importantly, this study did not tease apart whether increased helping led to better mental health or whether people with better mental health were more likely to help (or if there is a causal relationship between the two factors at all).

In contrast, a study of 73 spousal caregivers measured the amount of time they spent in caregiving activities, as well as their emotions at random points throughout the day during a seven-day period **(Poulin et al., 2010) [115]**. The results showed that the time caregivers spent helping their spouse predicted positive affect—that is, the more time they helped, the happier they felt. This was especially true for spouses who self-reported a high level of interdependence with their spouse. Since this study was fairly small and had a rather homogeneous pool of participants, it is unclear how broadly these results can be generalized. But they do provide evidence that caregiving, while sometimes draining, can also be emotionally rewarding.

According to the results from another study, helpers may reap the most psychological benefits if they are helping on their own accord. In this four-part study, the more autonomous a generous act was, the greater the positive results (increased subjective well-being, feelings of vitality, and self-esteem); this was true among both givers and receivers. **(Weinstein & Ryan, 2010) [534]**.

Given these results, other researchers looked at whether it was possible to boost well-being by boosting one's sense of autonomy in performing everyday acts of kindness (Nelson et al., 2014) [20]. In this online study, some participants from a public university in the United States and a public university in South Korea were instructed to perform five acts of kindness per day, once a week, for six weeks while others were assigned a control activity. During this six-week period, some of the participants received messages designed to increase their sense of autonomy. Participants who were assigned to do acts of kindness and who received the support messages showed greater improvements in their well-being than did people who performed kind acts but did not receive the support or who were assigned to the control condition (with or without support).

A study of 585 people living in a retirement community in Florida found that people who had reported more frequent volunteering and informal helping in one wave of the study reported higher life satisfaction at a later wave of the study **(Kahana, Bhatta, Lovegreen, Kahana, & Midlarsky, 2013)[85]**. Additionally, altruistic attitudes, more volunteering, and more informal helping all predicted positive emotions at the later time point. More frequent volunteering also predicted fewer future depressive symptoms. The connection between having altruistic attitudes and experiencing positive emotions may be especially important for older adults who have health problems that make actual volunteering and helping more difficult. This finding suggests that having a "generous spirit," even when it may difficult to act on that spirit, can help maintain positive emotions in later life.

Links between generosity and happiness

Many studies investigating the link between generosity and psychological well-being have zeroed in on happiness specifically. While popular culture may imply that happiness comes

from focusing on yourself, research suggests the opposite: Being generous can make you happier.

This seems to be true even from a young age: One study found that toddlers younger than two exhibited more happiness when giving treats to a puppet than when receiving treats themselves and were even happier when they gave some treats from their own bowl (versus giving the puppet a newly discovered treat) **(Aknin, Hamlin, & Dunn, 2012) [105]**.

Indeed, even small acts can increase happiness. A study of male undergraduates found that helping pick up spilled objects increased their positive mood **(Williamson & Clark, 1989) [210]**. In fact, just agreeing to help improved their mood, although not as much as agreeing and actually helping. Students who were not asked to help (and didn't volunteer to do so) saw a small drop in their mood. Participants in another study were instructed to perform acts of kindness for others or the world over a six week period; these participants reported increased positive emotions and decreased negative emotions, while others who were instructed to perform acts of kindness toward themselves did not report any emotional benefits (Nelson, Layous, Cole, & Lyubomirsky, 2016) [16].

While small acts of generosity can seemingly increase happiness, more sustained generosity may be even more effective. A study using data from more than 29,000 adults found that people who volunteered for religious organizations reported greater happiness than people who did not volunteer for these organizations. In addition, more religious volunteering made people feel, or at least report feeling, greater happiness (as calculated via regression), perhaps by making them appreciate the good in their lives more deeply rather than comparing themselves to others who have more **(Borgonovi, 2008) [329]**.

Spending money on others promotes happiness

Can money buy happiness? It depends on what you spend it on. A survey of 632 Americans found that spending money on other people was associated with significantly greater happiness, regardless of income, whereas there was no association between spending on oneself and happiness. This study also found that employees who spent more of their bonus money on others reported feeling happier than they had before receiving the bonus, while other types of spending had no effect on happiness. Additionally, participants in a lab experiment who were told to spend money on someone else reported greater happiness than participants who spent money on themselves, regardless of whether they spent five or 20 dollars. This suggests that altering our spending patterns so that we spend as little as five dollars on another person could make us significantly happier **(Dunn, Aknin, & Norton, 2008) [979]**.

Why, then, do people not spend more of their disposable money on others? The prior study looked at that question, too. A significant majority of the participants predicted that spending money on themselves would make them happier than spending on others. This suggests that people are not inherently aware of the happiness benefits that can come from

spending their money generously, and that interventions that promote such spending may help increase societal happiness.

So giving money to others may make us happy, at least according to one study, but does being happy make us give? It just might, according to a different study by the same researchers **(Aknin, Dunn, & Norton, 2012) [160]**. In this study, 51 people were randomly assigned to recall and describe the last time they spent 20 or 100 dollars on themselves or someone else. They next reported their current level of happiness. Participants then anonymously chose whether they wanted to spend money provided by the experimenters on themselves or someone else—whichever they thought would make them the happiest. As in previous studies, people felt happier after remembering a time they had spent money on others, and people who had reported feeling happier were more likely to choose to spend money on someone else. Importantly, it was not that remembering spending money on others led people to be generous in the future—happiness was the key mediating factor (i.e., people who reported great happiness from spending on themselves were also more likely to spend money one someone else). These results suggest a positive feedback loop between generosity and happiness: giving can make people happy, which can encourage them to give again.

Importantly, almost all of the aforementioned studies that have explored the connection between giving and happiness have used participants from WEIRD (Western, educated, industrialized, rich, and democratic) countries, raising the question of whether the connection is a universal psychological phenomenon or a culturally determined one.

A study designed to answer this question found that the emotional reward people experience in response to giving to others may be universal. Survey data from 136 countries showed that people who had reported giving to charity in the past year reported greater happiness, even after controlling for potential confounds such as household income, age, gender, marital status, education, and food inadequacy **(Aknin, Barrington-Leigh, et al., 2013) [272]**. In fact, the happiness derived from donating to charity was on par with the level of happiness associated with a doubling of one's household income.

A second part of this study asked people from three countries—Canada, Uganda, and India—to remember a time they had spent money on themselves or someone else. The participants from all three countries who were told to recall spending money on someone else reported greater happiness than those assigned to recall spending money on themselves, and this effect appeared to be independent of the role that the spending could play in fostering a social relationship (which in itself could lead to more happiness).

In a third part of the study, Canadian and South African participants were given the option to anonymously buy a goody bag filled with treats. Half were told they would be buying the goody bag for themselves while the other half were told they would be buying the treats for a sick child they would never meet. Across both cultures, the participants who spent the money on the bag for the sick child reported greater positive affect than did those who bought the bag for themselves, suggesting that people still reap more happiness from giving to others they will never meet than from spending on themselves. Together these

findings provide cross-cultural evidence that generosity leads to happiness in a wide variety of contexts.

Research suggests that to maximize the happiness that comes from giving, people must feel that their giving has had or will have a positive impact on the recipient. In one study, giving more money to a charity led to more happiness, but only when participants were told that their donation would specifically buy a bed net for a child in Africa (and how that bed net would make a difference in that child's life) and not when they were told their donation would simply support the charity's general fund **(Aknin, Dunn, Whillans, Grant, & Norton, 2013) [63]**. This suggests that highlighting the impact that a donation or gift has on its recipient may increase the emotional rewards associated with generosity, and could lead to increased giving. Another study found that, across three different experiments, adding tangible details about a charity's interventions increases donations—but only when these details increased "the impact that donors believed their contributions would make" **(Cryder, Loewenstein, & Scheines, 2013) [58]**. Perceived impact and efficacy has been identified as an important factor in other studies of charitable giving **(Bekkers & Wiepking, 2010) [536]**. In short: knowing a donation is likely to make an impact makes people more likely to donate and to feel happier after doing so.

Why does generosity make us happy?

According to self-determination theory, humans depend on satisfying three basic needs for optimal psychological well-being: relatedness, competence, and autonomy **(Weinstein & Ryan, 2010) [534]**. Research on the connection between spending money on others and happiness suggests that giving scenarios that help people satisfy these needs result in the most happiness for the giver. People are happiest when their giving is coupled with a social connection (relatedness), such as by not only buying a treat for a friend but also getting to spend time with the friend while she enjoys it; when they are given explicit information about how their donation will be used (competence); and when they are free to choose how much to give (autonomy)**(Dunn, Aknin, & Norton, 2014) [77]**.

There are other ways that generosity may influence happiness. People who routinely help others, perform acts of kindness, volunteer, or donate to charities may develop positive reputations, which in turn could lead others to reciprocate with more generosity, appreciation, and gratitude. Generous acts may also change the way people view the world, making them value cooperation, interdependence, and their own good fortune **(Lyubomirsky, Sheldon, & Schkade, 2005) [2377]**.

C. Workplace Benefits

Being generous also has benefits in the workplace. A study of 82 professional fundraisers found having a high perceived prosocial impact—a feeling that their work was helping others—appeared to protect otherwise vulnerable employees (those with low intrinsic motivation and poor self-evaluations) from the emotional exhaustion associated with job burnout **(Grant & Sonnentag, 2010) [131]**. Another study suggests that experiencing prosocial motivation—a desire to benefit other people—causes employees to consider the

perspectives of others and strengthens the association between intrinsic motivation and creativity, leading them to develop ideas that are both novel and useful **(Grant & Berry, 2011) [557]**.

A study found that offering Australian bank employees a "prosocial bonus" of 50 US dollars that they could spend on a charity increased their happiness and job satisfaction (although a 25 dollar prosocial bonus did not have these effects). This study also found that a different kind of prosocial bonus—money that must be spent on a coworker—increased team performance for sports teams and pharmaceutical teams, whereas personal bonuses (money they could spend on themselves) did not. It is unclear, however, whether the increased performance of these teams stemmed from a team member's being the *donor* or the *recipient* of a prosocial bonus, or whether the effect stemmed from a combination of the two (as each team member was both a donor and recipient) (Anik, Aknin, Norton, Dunn, & Quoidbach, 2013) [34].

Another study looked at how generosity can be propagated through a workplace. This study of Coca-Cola employees in Spain assigned some employees to be Givers who selected five acts of kindness (such as bringing someone a drink or emailing a thank you note) for a Receiver they selected from a subset of their coworkers (Chancellor, Margolis, & Lyubomirsky, 2016) [0]. Meanwhile, other employees were designated Observers who neither gave nor received the acts of kindness. Social network analysis showed that closer social proximity to Givers was associated with a boost in Observers' well-being, while closer social proximity to Receivers had a nonsignificant trend toward decreased well-being. Importantly, social proximity to both Givers and Receivers predicted increased prosocial acts among Observers, suggesting that acts of kindness can spread across the social networks within a workplace and increase employee well-being.

D. Relationship Benefits

Generosity, perhaps unsurprisingly, also has benefits for interpersonal relationships.

People intuitively understand that maintaining close relationships often requires acts of generosity and sacrifice, and research bears this out, especially for romantic relationships. For example, a study comprising multiple surveys and experiments found that willingness to sacrifice for a romantic partner was associated with better functioning relationships and feelings of commitment **(Van Lange et al., 1997) [656]**. And a study that had members of 69 couples keep a 14-day diary of the sacrifices they made for their partners as well as their emotions found that acts of sacrifice were associated with positive emotions and feelings of relationship satisfaction for people who were highly motivated to respond to their partner without expecting or wanting reciprocity **(Kogan et al., 2010) [60]**. When it comes to marriages, a study of 1,365 couples found that small acts of kindness—along with displays of respect and affection, and a willingness to forgive one's spouse's faults—had a positive association with marital satisfaction and a negative association with marital conflict and perceived likelihood of divorce (Dew & Wilcox, 2013) [13].

Generosity also seems to carry benefits when interactions between people do not go as planned because of unexpected circumstances (what is termed "social noise"). For example, imagine this scenario: Your friend did not respond to your email because of a problem with his internet connection. Because you did not know of the problem, you may think your friend is ignoring you, which may lead you to delay responding to the next email from your friend as a form of reciprocation. One study found that generosity can help overcome the detrimental effects caused by this type of "noise" in social dilemmas.

The study found that rather than responding to someone's actions with strict reciprocity in "tit-for-tat" fashion, behaving slightly more generously than that person's last action leads to more overall cooperation. This suggests that adding a small generosity buffer and giving someone the benefit of the doubt may lead to more cooperation and stronger relationships. However, the paper also highlights how deferring to increased generosity can sometimes be problematic—say, in a situation where two friends end up buying each other more and more expensive gifts even when neither party actually wants to spend that much **(Van Lange, Ouwerkerk, & Tazelaar, 2002) [150]**.

A follow-up study with different experimental paradigms confirmed and extended the findings from this study. In fact, results from the second study showed that "even when there was no noise, the other-regarding strategies elicited equal or even greater cooperation levels (in case of a generous strategy) than did tit-for-tat." According to the researchers, these results suggest that "the power of generosity is underestimated in the extant literature, especially in its ability to maintain or build trust, which is essential for coping with noise" **(Klapwijk & Van Lange, 2009) [100]**.

V. Individual Factors that Influence Generosity

A number of individual factors—including a person's emotions, personality, gender, religion, and sense of identity—can lead people to be more or less generous, both as a general propensity and in specific situations.

A. Psychological Factors

Empathy and compassion

One of the most studied psychological motivations for generosity is empathy, and research has established a strong, if variable, connection between empathy and altruism **(de Waal, 2008) [1385]**.

In particular, the "empathy-altruism hypothesis" posits that empathy "evokes truly altruistic motivation, motivation with an ultimate goal of benefiting not the self but the person for whom the empathy is felt" **(Batson & Shaw, 1991) [864]**. In one of the studies that informed this hypothesis, college student participants watched another student receive electric shocks and were given the chance to help her by volunteering to take the remaining shocks themselves **(Batson, Duncan, Ackerman, Buckley, & Birch, 1981)[942]**. Subjects were manipulated to feel either a low or high degree of empathy for the student who was being shocked, and some subjects were told they had to observe all the shocks (the hard-to-escape condition) while others were told they only had to watch two shocks (the easy-to-escape condition). Results showed that students in the high empathy condition were just as likely to help in the easy-to-escape and hard-to-escape conditions, suggesting that more empathy led to more altruistic motivation—they were truly moved to help the person in need, even when they could leave. On the other hand, students in the low empathy condition helped more in the hard-to-escape condition than in the easy-to-escape condition, suggesting that their helping was motivated more by selfish motives (to alleviate their own suffering) than altruistic ones.

Several other studies have found evidence supporting the empathy-altruism hypothesis in different conditions **(Batson & Ahmad, 2001 [198]; Batson & Moran, 1999 [282]; Batson et al., 1991) [430]** (Bethlehem et al., 2016) [2], while other studies have suggested that although empathy does appear to increase generosity, this effect is likely due to ultimately selfish motives. For example, one study found that empathy creates self-other overlap—a sense "oneness" with others—and argued that when we help others under this state of oneness we feel as if we are also helping ourselves **(Cialdini, Brown, Lewis, Luce, & Neuberg, 1997) [1188]**.

While certain conditions can induce empathy, individuals also vary in their inherent empathic abilities. For example, some people are more adept at "affective empathy," the ability to viscerally sense and understand another person's emotional states **(Mehrabian, Young, & Sato, 1988) [249]**, and one study found that people who are highly sensitive to other people's fear and can accurately identify it from facial expressions had a greater

desire to help in a lab experiment **(Marsh & Ambady, 2007) [63]**, although determining the extent of the relationship between emotional perception and empathy is still an active area of research (Olderbak & Wilhelm, 2017) [0].

Evidence suggests, however, that people can build on their inherent empathic ability through practice (for a review of empathy interventions see (Weisz & Zaki, 2017) [1]). In one study, people who saw empathy as a malleable skill that they can develop over time were more likely to exhibit empathic behaviors, such as reporting stronger efforts to feel empathy when it is challenging, spending more time listening to an emotional story from a person of a different race, and being more willing to help cancer patients **(Schumann, Zaki, & Dweck, 2014) [51]**. Another pilot study found that people who received text messages designed to build empathy for 14 days showed more indicators of empathy and prosocial behavior than did people who received low empathy messages or no messages; however, perhaps surprisingly, participants in the empathy-building intervention reported decreased self-perceptions of empathy (Konrath et al., 2015) [8].

Related to empathy is compassion—caring for and wanting to help those in need—and research suggests that feelings of compassion can also lead people to behave generously. While empathy is required to experience compassion, the two terms are not interchangeable as empathy can also lead to distress. Studies have shown that when empathy results in compassion it leads people to help others who are suffering, whereas empathic distress leads people to seek to escape the situation to relieve their own suffering; see reviews: **(Eisenberg & Miller, 1987) [2119]**, **(Batson & Shaw, 1991) [881]**, **(Goetz, Keltner, & Simon-Thomas, 2010) [712]**.

Interventions designed to increase a person's sense of compassion can also increase their propensity to engage in prosocial behaviors. One study found that participants who had engaged in short-term compassion training were more helpful to other players in a collaborative video game compared to participants who had undergone short-term memory training **(Leiberg, Klimecki, & Singer, 2011) [182]**, and another study found that compassion training increased the amount of money participants gave to other players in an online economic game **(Weng et al., 2013) [214]**.

Emotions

Beyond the roles of empathy and compassion per se, people can be motivated to generosity by experiencing both positive and negative emotions; the exact nuances of how emotions influence generosity have been an active area of research.

In one study, students primed to feel elated did more of a tedious task presented as a favor to the experimentor, and a greater percentage volunteered for an unpleasant future experiment, compared with students primed to feel depressed (although the depressed students did more of the task when it was framed as a requirement) **(Aderman, 1972) [238]**. These results appear to suggest that positive moods lead to more generosity than do negative moods, but this is not always the case. Another study used emotional pictures to induce different moods in 33 female students, then gave them the opportunity to help a

graduate student by volunteering to do an experiment; the results of this study showed that the positive mood induction did not influence helping, but the negative mood condition actually tended to increase helping **(Donnerstein, Donnerstein, & Munger, 1975) [55]**.

Analysis of self-reported emotions in this second study suggests that the students in the negative condition felt more guilt than those in the positive mood condition. The students may have agreed to help as a way to alleviate guilt, a response that has been found in other studies as well **(Regan, Williams, & Sparling, 1972) [143]**. Researchers have studied the relationship between guilt and generosity from other angles, too. For example, a study looking at two forms of guilt, chronic guilt ("an ongoing condition of feeling guilt") and predispositional guilt ("a personality proclivity for experiencing guilt in response to circumscribed eliciting situations"), in 101 undergraduate students found that predispositional, but not chronic, guilt was strongly associated with increased volunteerism **(Quiles & Bybee, 1997) [114]**.

There is also a great deal of research about how positive emotions may elicit generosity. Economists in particular are interested in how people are motivated by so-called "warm glow motives," the warm, pleasant feelings that people get when they are generous **(Andreoni, 1989) [2680]**, **(Andreoni, 1990) [4316]**.

One lab-based experiment found that while some people helped a child in need due to altruistic reasons—a genuine desire to alleviate the suffering of others—other people seemed to help based more on how they thought helping would make them feel (warm glow motives) (Ottoni-Wilhelm, Vesterlund, & Xie, 2014) [10].

Some participants were purely motivated by altruism and others purely by warm glow motives, but most showed a mix of motivations. While it may not seem to matter what motivates someone to give in a certain context—as long as they give—this research suggests that if we *can* determine their motivations, we may be able to convince people to give more (say, by playing to their altruistic tendencies, their sense of duty, or their desire to enjoy the psychological rewards of giving).

However, studies from psychology suggest that it is not just the expectation of warm glow that leads to generosity—feeling happy to begin with may also make people more generous. In one study, participants who were asked to do a writing exercise designed to elicit positive feelings—they either expressed gratitude, wrote about an ideal future self, or wrote about an intensely joyful experience—applied more effort when they were asked to perform acts of kindness than did participants who did a neutral writing task (Layous, Nelson, Kurtz, & Lyubomirsky, 2016) [8]. And, as mentioned earlier, another study found that participants who recalled a time when they purchased something for someone else felt happier than those who recalled spending money on themselves; the happier the participants were following this memory, the more likely they were to choose to spend money on someone else in a subsequent lab experiment, suggesting that there is a feedback loop between happiness and generosity **(Aknin, Dunn, et al., 2012) [163]**.

Feelings of gratitude also appear to motivate generosity, regardless of whether one is receiving or giving the thanks. In one study, students who provided helpful comments on another student's cover letter were significantly more likely to help a second student with their cover letter if they had received a brief thank you note from the first student **(Grant & Gino, 2010) [293]**; another study found that people who were thanked after pledging to give money in the future were less likely to renege on their decision to give (Andreoni & Serra-garcia, 2016) [0]. Yet another study found that people induced to *feel* gratitude to someone who provided them with assistance later spent more time helping that person and a stranger than did people who had not experienced gratitude **(Bartlett & DeSteno, 2006) [717]**.

Feelings of awe, defined as the feeling of being in the presence of something vast that transcends one's understanding of the world, can also increase generosity. In one study, participants who watched awe-inspiring videos reported greater willingness to volunteer their time to help others—among a host of other positive effects—when compared with participants who watched videos that induced other emotions **(Rudd, Vohs, & Aaker, 2012) [173]**. Another study found that participants who took photos of nature scenes that they found inspiring, and later wrote a description of those feelings, reported feeling kinder, more helpful, and more connected to others than did participants who took photos of human-built environments or who did not take any photos (Passmore & Holder, 2016) [1]. And yet another study asked some participants to stand among towering eucalyptus trees and look up for one minute, while other participants simply looked up at a building for one minute. Those who looked at the trees experienced more awe—and also picked up more pens for a researcher who "accidentally" spilled them on the ground **(Piff, Dietze, Feinberg, Stancato, & Keltner, 2015) [69]**. Thus, besides the benefits that come from experiencing wonder at the world, encouraging people to feel awe may have the added benefit of leading those people to behave more generously.

Similarly feelings of elevation—the feeling that we get when witnessing someone perform a good deed or morally exemplary act **(Keltner & Haidt, 2003) [646]**—can inspire generosity. One study found that undergraduate students who reported frequently experiencing moments of elevation also reported frequently engaging in prosocial behaviors such as making change for a stranger or donating blood (Landis et al., 2009) [48], while another found that inducing feelings of moral elevation via video clips or written stories increased white participants' donations to a black-oriented charity **(Freeman, Aquino, & McFerran, 2009) [107]**. Another study found participants who were induced to feel elevation by watching a video clip of musicians thanking their former teachers were more likely to volunteer for an unpaid study or spend more time helping an experimenter with a tedious task compared to people who watched a video intended to induce mirth or a control film clip **(Schnall, Roper, & Fessler, 2010) [184]**. An earlier experiment found that lactating mothers who watched the same elevating film clip were more likely to nurse their infants, suggesting that elevation increases oxytocin release, which may help explain a mechanism for how elevation can lead to more generous and prosocial behavior **(Silvers & Haidt, 2008) [103]**.

Personality

Personality traits also seem to influence a person's propensity toward generosity. There may, in fact, be people who are more of 'giving type': A study where participants reported how often they had engaged in 20 different prosocial behaviors (such as giving money to charity, donating blood, or holding a door open for a stranger) found evidence of an altruistic personality trait—an individual's self-reported behavior was highly consistent with a peer's rating of their behavior as well as other measures of altruism **(Rushton, Dovidio, Piliavin, & Schroeder, 1981) [720]**. Another study that had 1,400 people play economics games—like the dictator and ultimatum games—found that people who were generous in one cooperation game were likely to be cooperative in another, as well as in non-game contexts, suggesting to the authors evidence of a "cooperative phenotype" that is stable across time and situations **(Peysakhovich, Nowak, & Rand, 2014) [99]**.

Other research has focused in on specific personality traits that appear to relate to or predict generous behaviors. For example, a study of people who had stepped in to help accident victims found that the helpers described themselves as "more internal, believed more in a just world, and emphasized more social responsibility and empathy" than did those who had watched the accident but not helped **(Bierhoff, Klein, & Kramp, 1991) [231]**.

A study with participants from six countries looked at how a number of different properties, including personality factors, related to the frequency with which people reported giving and receiving help. It found that high levels of certain personality factors—guilt, extraversion, and religiosity—were correlated with measures of altruism in people across the different countries, whereas shame was negatively correlated with altruism **(Johnson et al., 1989) [113]**. In addition, humility was "a consistent and robust predictor of generosity" in three different experiments **(Exline & Hill, 2012) [72]**.

Also of interest to researchers has been how the Big Five personality dimensions—extraversion, agreeableness, conscientiousness, neuroticism (emotional stability), and openness to experience—relate to various forms of generosity. A dictator game experiment found that people with high extraversion said they would give more in a hypothetical game than they actually did in a real game while highly agreeable people gave more than they said they would **(Ben-Ner, Kramer, & Levy, 2008) [84]**. A different study found no relationship between altruism toward relatives and any of the big five traits, but it did find significant and complex associations between some of the traits and giving to collaborators, neutral parties, and competitors **(Ben-Ner & Kramer, 2011) [58]**. And yet another study asked 563 Japanese undergraduates to fill out a survey about the altruistic behaviors they engage in during their day-to-day lives and found that: more extraversion was associated with more altruism toward family members, friends/acquaintances, and strangers); more conscientiousness was associated with more altruism toward family members; more agreeableness was associated with more altruism toward friends/acquaintances; and more openness was associated with more altruism toward strangers (Oda et al., 2014) [19].

When it comes to volunteering, a study of 796 college students found that a person's level of agreeableness appeared to have a direct effect on their volunteering behavior—more

agreeableness was associated with more volunteering—whereas high extraversion had an indirect effect (it further boosted the effect of agreeableness) **(Carlo, Okun, Knight, & de Guzman, 2005) [294]**.

Morals and values

Research suggests that another determinant of helping behavior is the internalized moral value termed the "principle of care," a belief that one should help someone in need **(Ottoni Wilhelm & Bekkers, 2010) [152]**. A study of people in the United States and the Netherlands found that people who showed a strong moral principle of care also gave more money to charities that help people in need. This study also found support for a hypothesis that the moral principle of care could serve as a connection between empathic concern and action (giving) (Bekkers & Ottoni-Wilhelm, 2016) [8]—that is, people who empathize with someone in need are more likely to actually help that person because they are also more likely to have internalized the moral principle of care.

A recent study of how children's values influence their generosity found that children who placed more weight on self-transcendent values—such as tolerance and concern for others—were more likely than other children to share, but there were no differences between the two groups when sharing didn't really come at a cost to the child (Abramson, Daniel, & Knafo-Noam, 2017) [0]. Another study of 682 adolescents found evidence for a bidirectional relationship between prosocial values and high-cost prosocial behaviors, such as volunteering—in other words, engaging in those behaviors seemed to nurture prosocial values, just as prosocial values seemed to promote those behaviors. This suggests to the authors that "it may be particularly important to engage teens in high-cost prosocial behavior in an attempt to further promote moral identity via personal values" (Padilla-Walker & Fraser, 2014) [12]. Studies of adult volunteers have also found that people who volunteer place more importance on prosocial values than non-volunteers do **(Wymer, Riecken, & Yavas, 1997) [62]**.

Appealing to people's morality can also encourage generosity. One study found that just adding the sentence, "Note that he relies on you" increased giving in a dictator game **(Brañas-Garza, 2007) [101]**.

B. Gender

Researchers have reported several gender differences when it comes to generosity, although the findings have been inconsistent. While many survey studies have reported that women volunteer more and give more money to charity, the magnitude of these differences varies and is often not very big, and some studies have found evidence of men being more generous than women **(Einolf, 2011) [153] (Wiepking & Bekkers, 2012) [87]**.

Beside surveys, lab experiments are another way to look at gender differences in giving, although here too there have been inconsistent results. Experiments with "public goods games"—where people can choose to contribute money to a central pot and the money is

then multiplied by a factor and divided among all participants—have reported both that all-male groups are more generous **(Brown-Kruse & Hummels, 1993) [295]** and that all-female groups are more generous **(Nowell & Tinkler, 1994) [183]**. Results from dictator game experiments have also been variable. One study did not find any significant differences between male and female players **(Bolton & Katok, 1995) [243]**, while another reported that women gave, on average, twice as much to their anonymous partner as men gave **(Eckel & Grossman, 1998) [868]**.

However, one particular modification of the dictator game did discover an interesting gender-specific difference in giving **(Andreoni & Vesterlund, 2001) [1119]**. In this version of the dictator game, players were given a number of tokens that they could divide between themselves and another player, as per usual. However, in different rounds of the game, the payoff for the tokens differed so that in some rounds one token would be worth more when kept and in other rounds it would be worth more when given to the other player.

When summed across the different rounds, men and women gave the same amount of money on average; both genders were equally altruistic. However, individual men were more likely to be perfectly selfish or perfectly selfless, while women tended to be more egalitarian across the board. And when zooming in on how men and women behaved during the different rounds, a clear difference emerged: Men gave more when giving was cheaper (i.e., when a token was worth more when given away), women gave more when giving was more costly (i.e., when a token was worth more when kept).

If men and women have such different opinions and tastes when it comes to giving to charity, how do heterosexual married couples make giving decisions? A study using self-reported data collected from 3,572 American households found that single men and women displayed their generosity differently. Men's giving was more sensitive to income and tax incentives, and they tended to give more money to fewer charities, whereas women tended to give less money to a greater variety of charities. When it came to married people, donations varied depending on who was making the giving decisions. In households where one spouse took on the responsibility, the decisions tended to mirror that spouse's expected preferences and influences. However, in households where husbands and wives made joint decisions, these decisions more closely resembled the husband's expected preferences. Joint decision-making also depressed the overall amount of money donated by an estimated six percent **(Andreoni, Brown, & Rischall, 2003) [270]**.

Interestingly, results from a more recent study examining charitable giving by young adults in the United States found evidence that some aspects of marital giving decisions may be changing across generations (Women's Philanthropy Institute, 2016). This survey found that the average amounts given by young single men and young couples is lower now than it was four decades ago, whereas the amount given by young single women is about the same. It also found that for couples where the man made the giving decisions, the average amounts of giving were lower among GenX/Millennial couples than among pre-Boomer couples but were higher among couples where women influenced giving decisions.

Gender role expectations

Research suggests that the links between gender and generosity may be tied to social expectations.

Results from a lab experiment suggest that women expect that other women will be more generous than men whereas men believe that men and women are likely to be equally generous **(Aguiar, Brañas-Garza, Cobo-Reyes, Jimenez, & Miller, 2009) [67]**. Since the majority of the people in this experiment expected women to be more generous, the researchers speculate that this could have consequences in the workplace, with women being more expected to take on caregiving jobs and to take parental leave.

Indeed, research suggests that women are expected to be more selfless and caring and are often punished when they do not live up to this social norm **(Heilman & Okimoto, 2007) [503]**. Thus, they may also be more likely to internalize a propensity for altruism. A meta-analysis of 22 dictator game experiments found that when experiments are designed so that participants rely more on their intuition than deliberation, women increased their altruism whereas men show the same amount of altruism (Rand, Brescoll, Everett, Capraro, & Barcelo, 2016) [29].

Further analysis found that this effect was specifically mediated by gender role identification, suggesting that women were acting on an internalized social norm to behave generously when they were forced to make a decision based on intuition alone. Women gave more then men in all conditions—except for one: Women who reported identifying with traditional masculine gender roles and were asked to deliberate gave a similar amount as men. Interestingly, when it comes to cooperation rather than straight altruism, both men and women were more cooperative when relying on their intuition, suggesting that cooperation is a strategy that increases success in daily life for both genders and thus is internalized by both men and women (Rand, 2016) [0].

Gender roles may also play a role in marital generosity. A study of 1,368 couples found that "domestic gender egalitarianism," the sharing of housework and childcare, was associated with greater marital generosity (small acts of kindness, forgiveness, affection, and respect). Other factors positively associated with more marital generosity were religiosity and commitment (Wilcox & Dew, 2016) [6].

Of course gender roles are not the only mechanism that could contribute to differences in generosity between men and women. One study of charitable giving found that women rated significantly higher on empathic concern and principle of care measures than did men, and that these motives for generosity were "positively and significantly related to giving for both men and women" **(Mesch, Brown, Moore, & Hayat, 2011) [60]**. However, in this study, women were also more likely to give, and gave more money to charities, even after controlling for these motives and other likely confounding factors.

Together, these studies suggest that the influence of gender on various forms of generosity is rather complex and is an area that is likely to be explored further in future studies.

C. Religious Factors

Are religious people more generous than non-religious people? Do people of one religion tend to be more generous than others? Several studies have sought to answer these questions, with somewhat disparate results.

A study of nearly 30,000 people across 50 communities in the United States found that religious people were 25 percent more likely to donate money to a charity than were secular people **(Brooks, 2003) [114]**, and a 1998 study of giving across the American population, focused predominantly on different Christian traditions, found that self-identified nonreligious people gave less money to organizations who help the poor **(Regnerus, Smith, & Sikkink, 1998) [215]**. This study also found that more frequent church attendance and the degree of importance that people assigned to their religious beliefs were associated with increased giving, while how religious one's family was during childhood was not.

For the participants in this study, being religious appeared to have more of an effect on giving than did belonging to a particular religious tradition; the "other religious" group—which lumped together Jews, Mormons, Jehovah's Witnesses, and other religious identities—actually gave the most in this study, although small numbers in this group prevented a more detailed analysis of which denominations were responsible for this high level of giving. In contrast, another study using data about income and religious identity for a cross-section of Americans found that there were not statistical differences in giving to charities that support basic human needs across Christian denominational identities and nonaffiliated families. Jewish families, however, were more likely to give to these organizations, and to give larger amounts (Ottoni-Wilhelm, 2010) [19].

However, there have also been critiques of the design of some of the survey studies of religious giving, which often rely on self-reported data—people may inflate their charitable giving amounts or church attendance, for example—and sometimes fail to adequately define and separate different forms of generosity **(Galen, 2012) [211]** (Sablosky, 2014) [16]. As these critiques point out, experimental studies that have tested whether religious people give more in economic games have had mixed results, with many studies failing to show a correlation between religiosity and generosity **(Orbell, Goldman, Mulford, & Dawes, 1992) [62] (Ben-Ner, Putterman, Kong, & Magan, 2004) [174] (J. H. W. Tan, 2006) [102](Bekkers, 2007)[107] (L. Anderson, Mellor, & Milyo, 2010)[80] (Eckel & Grossman, 2004) [130]**(Grossman & Parrett, 2011) [20]. Multiple laboratory and field experiments looking at whether religious people were more likely to volunteer or offer help to someone in need also failed to find a relationship between various measures of religiosity and prosocial behavior (Annis, 1976) [31] **(Darley & Batson, 1973) [1561] (R. E. Smith, Wheeler, & Diener, 1975) [52].**

Similarly, studies that have used religious priming—where participants are either consciously or subconsciously exposed to either their own religiosity or the concept of religion in general—have shown mixed results. One field experiment found that religious

people were more likely than non-religious people to respond to a charity appeal but "only on days that they visit their place of worship" **(Malhotra, 2010) [92].** Another study found that participants who were asked to unscramble words and form a sentence were more generous in a subsequent anonymous dictator game when the words they were asked to unscramble had been related to God concepts or secular moral institutions than when they were given neutral words; this study also found that self-reported religiosity was not associated with giving **(Shariff & Norenzayan, 2007) [934]**.

However, studies that have attempted to replicate these findings and meta-analyses looking at religious priming have found mixed results **(Ahmed & Salas, 2011) [74]** (Gomes & McCullough, 2015) [29] (van Elk et al., 2015) [33] **(Shariff, Willard, Andersen, & Norenzayan, 2016) [104]**. Further complicating the picture is a study that found that people with a certain variant of the DRD4 gene behaved more generously following religious priming, while people with another variant of this gene were not susceptible to such priming **(Sasaki et al., 2013) [61]**.

Religion and political ideology

Of course, religion does not exist in a vacuum, and several studies have looked at how other factors may interact with religion to create a "culture of giving" that leads to charitable giving and other forms of generosity. One of these factors is political ideology. While one study reported that both religious liberals and religious conservatives gave more to charity than their secular political counterparts **(Brooks, 2003) [114]**, it is also possible that the religious-secular generosity divide is due to different views of how to be generous—as one paper states, "since atheism correlates with liberal political views, there may be greater support for tax-based humanitarianism" (Schloss, 2012) [1].

Another study found that while self-identified conservatives give more to religious charities than do liberals, taking into account religious service attendance erases this difference: Conservatives and liberals who had the same level of religious participation gave equally to religious charities. There were not any statistically significant differences between the amounts that liberals and conservatives gave to secular charities; however, people who "hadn't thought much about" their political ideology donated significantly less money to these charities (Vaidyanathan, Hill, & Smith, 2011) [25]. According to the authors, this finding challenges the idea that it is "conservative or liberal *ideology in itself* that drives people to be generous or stingy."

Religion and charitable giving across generations

There is evidence that changes in religious involvement over time may be reducing charitable giving. One study found that people who were born before World War II (1924-1938) gave more money to religious charities as they aged, and this giving grew faster than their income **(Wilhelm, Rooney, & Tempel, 2007) [60]**. However, according to this single study, baby boomers give less to religious and secular charities in middle adulthood than expected (as extrapolated from the giving of the prewar cohort). Both giving patterns appear to mirror changes in religious attendance—the prewar cohort was increasingly

involved in religion as they aged, whereas the boomers have been markedly less involved in religion.

Religion and volunteering

Several studies have also looked at how religion influences another form of generosity: volunteering. A number of these studies have found that religious individuals volunteer more than non-religious people, and attending religious services has frequently been reported as a strong predictor of volunteering **(Wilson & Musick, 1997) [1264]** **(Park & Smith, 2000) [311]**. For example, one study of 50,000 Americans found that religious people are 23 percentage points more likely to volunteer than are secular people (67 to 44 percent) **(Brooks, 2003) [114]**.

International studies also report an association between religiosity and volunteering. A study using data from 53 countries found that people who attended church more frequently were also more active in volunteer work, although the overall religiosity of the country as a whole also mattered: In more devout countries, the difference between religious and non-religious people volunteering was substantially smaller, and church attendance was "hardly relevant" for volunteering **(Ruiter & Graaf, 2006) [367]**.

A study of 9,464 people from 15 Western European countries offers more evidence that religious attendance is significantly—and positively—associated with volunteering (Paxton, Reith, & Glanville, 2014) [12]. This study also found that greater "religious salience" (believing that religion is an important part of one's life) and more frequent prayer were associated with increased volunteering, but to a lesser extent than religious attendance, while religious belief was associated with less volunteering. There were also some denomination-specific effects. For example, religious attendance and prayer both had a stronger association with volunteering for Protestants than for Catholics. A study from the Netherlands found higher charitable giving and volunteering among Protestants than among Catholics and non-religious people; there was a strong relationship between church attendance and religious generosity and a relationship between social values and generosity to secular causes **(Bekkers & Schuyt, 2008) [184].** A recent study of Dutch Protestants and Catholics found that Protestants reported higher prosociality than Catholics, a finding the researchers attributed to stronger religious beliefs (and belief in predestination) and not to a possible motivational function, such as increasing their self-esteem (van Elk, T. Rutjens, & van Harreveld, 2017) [0].

How religion motivates generosity

Since it is impossible to do a randomized control trial on the relationship between religion and generosity, studies looking into this relationship are purely correlative. While it would be difficult to test whether people who are religious just happen to also be generous, researchers can examine the ways in which religion may lead people to behave more generously.

For example, surveys of Catholics and Muslims in four cities found differences in how the two religions might motivate generosity. While Catholics place emphasis on loving others, Muslims emphasize duty to God. But these surveys also found similarities as well: Both groups see their generosity as motivated by the positive feelings they have toward their respective religious communities, rather than seeing their generosity as motivated by the monitoring or sanctioning of generosity within their communities. (Kılınç & Warner, 2015) [0] (Warner, Kılınç, Hale, Cohen, & Johnson, 2015) [8].

What about less religious people? What motivates them to be generous? According to one study, greater feelings of compassion are associated with greater self-reported prosociality, and this was especially true for the less religious **(Saslow et al., 2013) [53]**. This study also found that a compassion-inducing video made less religious people more generous (they gave more money during a dictator task), but this video had no effect on the giving of the more religious people. Additionally, current feelings of compassion led to more generous behavior in a host of economic games—but, again, only for the less religious people. This finding was not due to a ceiling effect—religious people could have been even more generous than they were. In fact, across all of the experiments, the most compassionate of the less religious people gave more than religious participants. The researchers posit that elicitors of compassion have such a greater influence on the generosity of less religious people because more religious people likely have multiple influences on their generosity, whereas less religious people may be more influenced by an emotional connection with others (although future work would need to test this hypothesis).

D. Identity

Research suggests that tying generosity to a person's identity may increase their generous intentions—they are more willing to give when they see generosity as part of who they are. For instance, in one study, young children were more likely to help others when they had been identified as "being a helper" (Bryan, Master, & Walton, 2014) [22]. Another study found that when people are encouraged to give away something that "represents one's essence," such as a signature, personal possession, or blood donation, they are more willing to give in the future than when they are first encouraged to give away things of a similar value that were less personal (Koo & Fishbach, 2016) [3]. And yet another study found evidence that more costly prosocial behavior may be more likely to spur future prosocial behavior—perhaps because, unlike easier prosocial activities, costly prosocial actions are more likely to make a person see oneself as having a prosocial identity **(A. Gneezy, Imas, Brown, Nelson, & Norton, 2012)** [129].

Additionally, identifying with a particular cause may lead to greater generosity and protect from "compassion fade" or the "collapse of compassion," the psychological process that dampens people's charitable responses to overwhelming large-scale crises. While compassion fade is normally thought to occur in response to humanitarian crises, a study found that it also follows environmental concerns—but only among self-identified non-environmentalists (Markowitz, Slovic, Västfjäll, & Hodges, 2013) [25]. Thus, getting people

to identify with a charity, cause, or group of people in need may lead to greater generosity by preventing these people from emotionally blocking out a stressful situation.

This evidence suggests that there is a complicated relationship between the diverse individual characteristics that influence generosity and a host of social and cultural factors that also shape a person's drive to do good in the world. The next section will delve into the research on some of these social and cultural factors.

VI. Social and Cultural Factors that Influence Generosity

All the findings in the previous section notwithstanding, research has also made clear that generosity is not solely a result of a person's emotions, personality, values, gender, religion, or other individual factors—it is also heavily influenced by social, cultural, and situational factors, as well as by various characteristics of the potential recipients of this generosity.

A. Social Factors

Humans are social creatures, and research shows that generous acts are influenced by a host of social factors, including expectations that one's generosity will be reciprocated, concerns about one's reputation, and even the feeling that someone may be watching you (even when you know they are not).

Reciprocity

People are often generous to those who have been generous to them or to those who they expect will pay back their generosity in the short- or longer-term future. This type of generosity is called "reciprocal altruism." Reciprocal altruism requires a cost to the giver and benefit to the receiver. It includes behaviors like warning cries that may bring danger to the crier, helping in times of danger (drowning, accidents, predation, etc.), sharing knowledge or tools, sharing food or other resources, and helping the sick, hurt, old, or young. According to theory, people often engage in these behaviors because they hope doing so will increase the likelihood that they'll receive aid if or when the tables are turned and they're in a similarly vulnerable situation.

Reciprocal altruism occurs in several animal species and is thought to be universal across human cultures. In fact, fundamental elements of human behavior—friendship, gratitude, trust, sympathy, suspicion, even hypocrisy—may have evolved in conjunction with this form of altruism **(Trivers, 1971) [10516]**. While reciprocal altruism is a concept in ecology, anthropology, and psychology, and has been studied for several decades, researchers continue to probe the extent and limitations of this form of generosity.

Economic games are frequently used to test the role of reciprocity in generosity (for an overview see **(Falk & Fischbacher, 2006) [2458]**). One study used a dictator game with two parts to test how reciprocity influences giving behavior **(Ben-Ner, Kong, & Putterman, 2004) [188]**. In this experiment, dictators and recipients were kept in separate rooms and were anonymous to each other and to the experimenters. In the first round, dictators chose how much of 10 dollars to give to the recipient. In the second round, recipients became donors. For half of the recipients, their partner was the same as in the previous round; for the other half of recipients, their partner was someone new. For the new dictators who were paired with their old partners, the amount that they gave was strongly correlated with the amount they had received from their partner in a previous round. For the dictators who were paired with someone new, there was a correlation between the amount they had received from their first partner and the amount they gave

their new partner, but it was lower and less significant. These findings suggest that direct tit-for-tat reciprocity was a stronger driver of behavior than a desire to pay generosity forward.

Social information

Studies show that people are sensitive to information about the generosity of others. For example, in a field study that looked at voluntary contributions to a national park in Costa Rica, subjects who were told that the typical contribution was 10 dollars contributed an average of four percent more money than did subjects who were not given a reference amount **(Alpizar, Carlsson, & Johansson-Stenman, 2008) [230]**. Telling subjects that the typical contribution was two dollars, however, increased the number of people who donated, but compared with when no reference amount was provided, it actually decreased the average contribution amount. This study also found that anonymous donors gave 25 percent less than people who donated in public and that giving a small gift of a magnet to potential donors increased donations by about five percent.

Another field experiment done with a public radio station's on-air campaign found donors who were told that a previous member had contributed $300 gave an average contribution of $119.70—12 percent more than the average contribution of $106.72 by donors who were not told of another member's contribution (**Shang & Croson, 2009) [431]**. Telling callers that another member had donated $75 (the median donation from the previous year's campaign) had no effect on donations.

A field experiment done in an art gallery found that the contents of a transparent donation box influenced both how likely patrons were to put in a donation and the amount that they donated. Specifically, a non-empty box generated higher average donations than an empty box; the percentage of patrons who donated was highest when large amounts of coins were visible, compared to an empty box or a box containing several small denomination bills or a few large denomination bills; but the average donation was highest when the box contained bills and lowest when it contained the coins (Martin & Randal, 2008) **[113]**. This study suggests that the social information provided by being able to see what other people had (supposedly) donated had a large impact on the behavior of potential donors.

Another study, also performed in a museum, found that people paid significantly more on "Pay-What-You-Wish Day" when told that someone else had already paid their admission and they had the opportunity to pay for a future visitor, compared to when they were told that they could just pay whatever they wanted for their own admission (Jung, Nelson, Gneezy, & Gneezy, 2014) [22].

Matching

Matching is a popular fundraising technique that relies on potential donors being positively affected by the behavior of others. Over the past two decades, a number of studies have sought to determine whether this technique actually does increase generosity in real world settings.

In one of the first non-laboratory-based studies to test the effect of matching, the donations of a randomly selected group of donors were matched by an anonymous donor. While this matching did increase the probability that someone would give during the matching period, it actually decreased future giving when a match was not in place, and led to a net decrease in donor participation **(Meier, 2007) [170]**.

Another field experiment that tested the effectiveness of 1:1 and 1:3 (i.e., "if you give $75, the matching donor will give $25") matching grants found that there was only weak evidence that either match worked—in fact, when looking at the full sample, giving only increased after the match deadline had expired **(Karlan, List, & Shafir, 2011) [60]**. However, more detailed analysis also uncovered heterogeneity in the responses—active supporters tended to be positively influenced by a match, whereas lapsed givers responded either neutrally or negatively.

Evidence from a natural field experiment of a charitable fundraising project organized by the Bavarian State Opera House found that recipients who were simply told about the existence of a substantial lead donor gave more than recipients who were told that the donor would match their donation, suggesting that the best way to maximize giving might be just announcing that there is a lead gift and not mentioning a potential match **(Huck & Rasul, 2011)[70]**. The findings from another field experiment of 40,000 potential donors suggests that this lead donor effect may be even stronger if donors are told that the initial gift will cover a charity's overhead costs. In this experiment telling potential donors that an initial donation was covering overhead costs "increased the donation rate by 80% (or 94%) and total donations by 75%(or 89%) compared with the seed (or matching) approach" **(U. Gneezy, Keenan, & Gneezy, 2014) [67]**.

Reputation

Another social factor that influences generosity and has been a popular topic of research is reputation or social image. In one study, undergraduate study participants were given the opportunity to give money to and receive it from other anonymous participants. Before deciding whether to give to a particular partner, participants were provided with that person's past donation decisions. Receivers with a history of past generosity received significantly more frequent donations **(Wedekind, 2000) [752]**, suggesting that people are more generous toward people whom they perceive as generous.

Another experiment had 114 students play a series of prisoner's dilemma games with a partner. Both players were rewarded when they both generously chose to contribute to a group pot, but individuals stood to lose money if they were generous but their partner was selfish. The researchers found that, in the short term, generous participants lost money, but they more than made back their losses thanks to the generosity of other participants who knew of their past generosity and were trying to build up their own positive reputations. This suggests that building up a generous reputation may be an adaptive strategy that benefits both individuals and society. Indeed, the researchers suggest that such "indirect

reciprocity could be a kind of social glue that keeps individuals together in a cooperative network" **(Wedekind & Braithwaite, 2002) [192]**.

Anonymity

Other studies have shown that people behave differently when their giving is anonymous versus when they know it will be visible to others. In one study, participants were more willing to agree to volunteer for a charity when they knew their decision would be made public than when decisions were kept private. This study also found that agreeing to volunteer actually did improve the reputations of people who made their offers in front of a group: They were seen as more trustworthy and worth befriending **(Bereczkei, Birkas, & Kerekes, 2007) [75]**.

Another experiment using a dictator game showed that people will often give less money when they can hide their selfishness **(Andreoni & Bernheim, 2009) [674]**. In this experiment, one participant was asked to choose whether to give money to another participant. Some of the time, the donor could choose how much to give the recipient; other times, the donor was forced to give nothing. Each recipient knew that the donor would be forced to act ungenerously a certain proportion of the time, so when a donor refused to give money, it was impossible to tell whether that stinginess was by choice. When the experimenters increased the probability that a donor would be forced to give nothing, donors generally chose to act more selfishly even when they were free to give away however much they wanted to—ostensibly because they could hide behind the uncertainty created by the experiment. This result indicates that when circumstances enable people to avoid responsibility or accountability for stinginess they may choose to be more selfish.

But sometimes people are generous even in situations where they are anonymous and their generosity cannot influence their reputation or be reciprocated. In an experiment where people were given the opportunity to anonymously mail some of their lab experiment money to random anonymous strangers, about one-third of the participants chose to do so **(Johannesson & Persson, 2000) [81]**.

"Eyespots"

Some studies have suggested that subtle social psychological cues can influence generosity, although this result has been a subject of debate among researchers. One study asked participants to play a series of games in a computer lab where they were separated from other participants. For some of the games, participants had a stylized drawing of eyes (called "eyespots") displayed on the computer monitor where they played the game. The eyespots substantially increased generosity: Almost twice as many people chose to give money to their partners after being confronted with the eyespots than gave money when they were not shown the eyespots **(Haley & Fessler, 2005) [1025]**.

Other studies, though, have not found generosity to increase after exposure to eyespots **(Fehr & Schneider, 2010) [102]** (Tane & Takezawa, 2011) [30]. Two recent meta-analyses found that eyespots do not increase the amount of generosity by individuals or the

likelihood that individuals will behave generously (Northover, Pedersen, Cohen, & Andrews, 2017) [20].

However, it is possible that the effect is highly context specific, and thus other studies have sought to replicate the effect with variations of the "eyespot" stimulus. One study found that just being presented with three dots in a "watching-eyes" configuration (with two dots on top and one on the bottom) versus a neutral configuration (with one dot on top and two on the bottom) led to increased giving, but only for male participants **(Rigdon, Ishii, Watabe, & Kitayama, 2009) [244]**. A meta-analysis of 25 eyespot experiments also found that short exposures, but not long exposures, to eyespots increased giving **(Sparks & Barclay, 2013) [61]**.

General feelings of connection and relatedness

Research also suggests that people are more generous when they feel more connected to others. For example, one study found that when people were primed with words that evoked relatedness (e.g. community, together, relationship), they later showed a greater interest in volunteering and donated significantly more to charity than did participants who were primed with neutral words **(Pavey, Greitemeyer, & Sparks, 2011) [97]**. This study also found that people reported a stronger intention to engage in generous acts in the future after writing about a time when they felt a strong bond with someone else.

In addition, a number of experiments have found that increasing people's feelings of attachment security—the sensation that other people are sources of security and support—increases their compassion and altruism toward strangers, even when those feelings of attachment security are stoked subliminally **(Mikulincer, Shaver, Gillath, & Nitzberg, 2005) [589]**.

B. Cultural Factors

Besides general social factors, research suggests that the culture in which a person grows up or currently lives also influences generosity.

A study of children and adults from six different societies—the United States, Fiji, Central African Republic, Namibia, Ecuador, and Australia—used economic games to test how generous children of different ages were when that generosity came at a cost. It found that very young children behaved similarly across cultures, but generous behavior began to diverge in middle childhood, when children appeared to start to conform to the norms of the adults of their societies **(House et al., 2013) [88]**. This finding suggests that although young children likely share a strong and universal proclivity for generosity, cultural forces can temper this impulse.

Another study that examined how fairness behavior developed in children from seven different societies—Canada, India, Mexico, Peru, Senegal, Uganda, and the United States—

(Blake et al., 2015) [49] found that an aversion against disadvantageous inequity (when a peer receives more than you do) emerged by middle childhood in all societies, but aversion against advantageous inequity (when you receive more than a peer) was more variable and only emerged in three societies (Canada, United States, and Uganda) and later in the child's development, suggesting that such aversion is a more limited cultural norm.

A different study examined the durability of cultural norms by measuring the frequency of charitable donations by immigrants and native-born people in more than 130 countries. This wide-ranging study showed that the generosity of immigrants was most strongly influenced by the norms of the countries where the immigrants settled, although there was still some remaining effect from their birth country (Helliwell, Wang, & Xu, 2016) [20].

Cultural norms of generosity can be malleable, according to the results of a recent study **(Peysakhovich & Rand, 2016) [127]**. In this study, the subjects played repeated prisoner's dilemma games with conditions that either did or did not support cooperation. They then played a different game to measure their generosity. Participants who had played the first game under conditions that supported cooperation were more prosocial and trusting in the second game (as well as more likely to punish selfishness).

One example of how cultures differ in their attitudes toward generosity can be seen in a comparison between people in the United States and the United Kingdom, based on surveys of the giving practices and social attitudes of people from both countries. Studies of giving in the U.S. suggest that it is "heavily interlaced with self-interest, either directly through tax benefits, benefits from the supported charity, or social status; or indirectly through the achievement of social goals which one might desire, such as better child care, civil rights, better parks etc.," whereas the norm in Great Britain appears to be more altruistic: "They have traditionally rejected mixed motives for giving, and are quite suspicious—particularly of philanthropic giving—because it is so rarely able to live up to popular expectations of purely altruistic motives" **(Wright, 2001) [99]**.

C. Social Network Factors

Studies suggest that our extended social networks and larger communities influence our generosity. For example, a survey of over 2,000 people found that people who had more friends were more generous—they more frequently engaged in behaviors like volunteering after an emergency or donating money, clothing, or blood **(O'Malley, Arbesman, Steiger, Fowler, & Christakis, 2012) [51]**.

Social networks and community integration appear to be especially important for encouraging volunteering. A survey of over 2,700 people found evidence that strong community ties promote greater time spent volunteering **(Jones, 2006) [112]**, and another study found that social connectedness, as measured by the number of different professional and social group meetings that a person attended, significantly predicted the number of hours that person spent volunteering, as well as the consistency of their volunteering and charitable donations **(Choi & Chou, 2010) [68]**. A different study found

that regions in Europe where people report more trust and social ties have higher volunteering levels (Glanville, Paxton, & Wang, 2015) [3].

Generosity is socially contagious

Several studies suggest that generosity can also be socially contagious. In one study, participants who watched others make generous donations donated more than those who watched others make stingy donations (Nook, Ong, Morelli, Mitchell, & Zaki, 2016) [12]. Another experiment in this study found that when people observed empathic group responses to emotional scenarios, they were more likely to increase their own empathic feelings and to donate more money to a homeless shelter. A different study, which involved a public goods game where participants could choose to act selfishly or cooperatively, found that every generous contribution that a participant made was tripled by other participants over the course of the experiment, suggesting that generosity can cascade through social networks **(Fowler & Christakis, 2010) [435]**. In fact, the researchers found that a generous act by one person could inspire generosity in someone three degrees removed from them, showcasing how "each person in a network can influence dozens or even hundreds of people, some of whom he or she does not know and has not met." And, as mentioned in an earlier section, there is also evidence that generosity can be propagated through workplace networks (Chancellor et al., 2016) [0]. Results from another study using various economic games suggest that just a single person acting as a "consistent contributor"—someone who chooses to be generous all the time, regardless of other people's choices—causes other people in a group to be more generous and cooperative **(Weber & Murnighan, 2008) [84]**.

D. Recipient Characteristics

While most of the generosity factors discussed thus far have focused on the characteristics of the person or people displaying generosity, research suggests that characteristics of the potential recipient can also impact generosity.

Social distance

People are often most generous to the people they are closest to, such as their family members and friends, and are willing to sacrifice more for these people's well-being than for lesser known individuals or strangers (Strombach et al., 2014) [25]. There may be evolutionary reasons for this phenomenon, which is also called "social discounting." Being generous to blood relatives may insure the survival of our kin and thus the continued transmission of shared DNA. Being generous to friends that we are likely to interact with again may result in reciprocal generosity in the future. It may also make us happier: Results from one study found that spending money on our closer social ties leads to more happiness than spending on weaker ties **(Aknin, Sandstrom, Dunn, & Norton, 2011) [57]**. However, not everyone looks at social distance the same way. People who were the *most* generous in a public goods game did not reveal as large a bias for those closest to them **(Jones & Rachlin, 2009) [94]**; neither did those who have donated a kidney to a

stranger—so-called "extraordinary altruists" (Vekaria, Brethel-Haurwitz, Cardinale, Stoycos, & Marsh, 2017) [1].

Group affiliation

In general, people are more generous and kinder toward people with whom they share some sort of affiliation—people who they see as members of their "ingroup." In one experiment, participants were more likely to help an injured jogger who wore their favorite soccer team's jersey than to help a fan of a rival team **(Levine, Prosser, Evans, & Reicher, 2005) [497]**. In another study, children as young as four to six years old gave more stickers to children who they were told shared their interests (Sparks, Schinkel, & Moore, 2017) [1].

Fortunately, there is also evidence that whom we consider to be in our "ingroup" is not fixed in stone. Research has shown that we can prime people to experience feelings of relatedness and connection toward others who they may have otherwise seen as "outgroup" members—and thus become more generous toward them. This is evident even early in development: a study of 18-month-olds found that reminding children of connectedness—through something as subtle as having two dolls facing each other—made these children three times more likely to help an adult in need **(Over & Carpenter, 2009) [131]**.

The malleability of a person's ingroup was also highlighted in a second experiment in the soccer fan study, which found that when people were reminded of their general identity as a soccer fan (rather than as a fan of a particular team), they were more likely later to help an injured fan of a rival team than they were to help someone who didn't seem to be a soccer fan at all.

Increasing empathy might also help encourage generosity toward out-group members. One study found having just two positive experiences with someone from another group created greater empathy for others in that same out-group (Hein, Engelmann, Vollberg, & Tobler, 2016) [14].

Identifiable victim effect

Several studies have found that people are more generous toward one specific, identifiable person than toward multiple or anonymous victims **(Jenni & Loewenstein, 1997) [435]**. This is called the "identifiable victim effect."

In one study, people were more likely to give money to another participant who had lost money in the experiment if that person was identified by a number than when a participant was completely unidentified. Participants also donated more money to a family in need when they were told that the charity had already chosen which family would receive the money than when they were told that the charity would choose the family in the future **(Small & Loewenstein, 2003) [567]**.

Another study found that people who saw a photo of a starving girl and read a description of her gave more money to an anti-hunger charity than did people who read statistics about starvation in Africa **(Small, Loewenstein, & Slovic, 2007) [551].** In fact, another experiment found that when statistics accompanied the girl's photo and description, people gave less money than when the statistics were omitted—suggesting that not only do people give more to identifiable victims, learning statistical information about a problem actually suppresses generosity.

One might think that teaching people that they were likely to be biased by the identifiable victim effect might increase their generosity towards statistical victims. Unfortunately, another experiment in this study that informed people about the effect found the opposite effect: Instead of making people more generous to statistical victims, this knowledge made them stingier with identifiable victims. This result suggests that, whenever possible, charities should make beneficiaries more identifiable. Many organizations likely already recognize this fact, which is why we see billboards and ads with individual children advertising charities.

Research also suggests that people are more generous to individuals than to groups. In one study, people were most likely to donate money for a sick child's medical care when presented with the child's name, age, and photo rather than just an age or an age and a name; however, another experiment in this study found that people donated more money to a single sick child than to a group of eight sick children, even when the children in the group had the same amount of identification (name, age, and photo) as the individual child **(Kogut & Ritov, 2005) [418]**.

One study suggests that this reduction of generosity toward groups is because people find the needs of larger groups to be emotionally overwhelming—so-called "compassion fatigue." According to the study, however, "this effect can be counteracted by preemptively and explicitly instructing people to feel their emotions rather than dampen them" **(Cameron & Payne, 2011) [150]**.

Based on the findings from another study, another approach to counteracting our tendency to be less generous to multiple victims is to take advantage of "unit asking." Unit asking requests that donors indicate a hypothetical amount that they would give to help a single needy person before deciding how much they will donate to a group of needy people. In this study, unit asking significantly increased the amount of money that people were willing to give to both online and paper-based fundraisers (Hsee, Zhang, Lu, & Xu, 2013) [24].

"Deservingness" of recipient

Another characteristic that influences generosity is a potential donor's perceived "deservingness" of the recipient. One study found that donations in a dictator game tripled when an anonymous person in need was replaced by the American Red Cross, an established and trusted charity **(Eckel & Grossman, 1996) [849]**. Another study found that when someone playing a dictator game watched an audiovisual presentation intended

to make a charity seem more worthy of their donation, the donor's giving increased by 10 percentage points. This study also suggests that race has an effect on worthiness perceptions: Participants rated charity recipients as more worthy when shown pictures of people of their own race **(Fong & Luttmer, 2011) [52]**.

And it is not just race that has an effect; traditionally stigmatized populations are less likely to be seen as deserving of generosity. In one study, a third of participants in a dictator game paid money to learn more about a potential recipient, and those who did so mostly used this information to withhold donations from less-preferred recipients, such as drug users **(Fong & Oberholzer-Gee, 2011) [54]**. Research suggests that participants anticipate feeling more emotional exhaustion when helping a stigmatized person, but that proactively framing this person's situation as "inspiring and rewarding" can counteract this effect (Cameron, Harris, & Payne, 2015) [11]. This suggests that organizations that help traditionally stigmatized populations may be able to elicit more generosity from a wider group of people by carefully framing their solicitations in a positive light, helping people to overcome their fear of emotional exhaustion and fostering a sense of connection with the person in need.

Direct solicitation by recipient

Several studies have shown that communication from a potential recipient can increase cooperation and generosity in economic games, although this effect can also be highly dependent on context **(Sally, 1995) [1210]**. This relationship is exemplified by a study that used modified dictator games to probe the connection between communication and generosity **(Andreoni & Rao, 2011) [212]**. In one part of this study, only potential recipients were allowed to communicate (i.e. "Please give me 50 percent because that is fair") but donors were not. In this scenario, recipients were frequently given what they asked for. However, in the opposite situation, when only donors could talk, the vast majority of the time the dictator would say something like, "I'm sorry," and keep all the money. Intriguingly, the dictator gave the most money in conditions where both participants were allowed to communicate.

While communication between potential donors and recipients may be one way to increase generosity, that doesn't mean people like it: One study found that people will often go out of their way to avoid being asked **(Andreoni, Rao, & Trachtman, 2011) [124].** Another study found that a charity doorknob flyer that informed people of when a future solicitation was to take place reduced the number of people who answered their doors by 9 to 25 percent and, if the flyer allowed people to check a Do Not Disturb box, it decreased giving by 28 to 42 percent **(Dellavigna, List, & Malmendier, 2012) [548]**.

E. Parenting Practices

Over the past several decades, there has been continued interest in exploring whether particular parenting practices, especially role-modeling and positive reinforcement, encourage generous behavior in children.

Role-modeling

Research suggests that both role-modeling generous behavior—for instance by visibly giving to charity or volunteering—and talking to children about the importance of generosity may encourage them to go on to be more generous people in the future, although studies vary in the effectiveness of these practices.

In a study where 7- to 11-year-old children were asked to consider giving some of their winnings from a bowling game to a children's charity, modeling was highly effective in inducing generosity in children both immediately and eight weeks later, whereas verbal encouragement was highly effective in the long term but not as an immediate intervention **(Rushton, 1975) [221]**.

Another study found that adolescent children of parents who had role-modeled charitable giving by openly donating to charities were more likely both to give to charity themselves and to volunteer. But the children of parents who both role-modeled giving and talked to their children about the importance of donations were even more likely to give and to volunteer (Ottoni-Wilhelm, Estell, & Perdue, 2014) [11]. This study also found that the association between role-modeling and generous behavior was stronger for girls than boys, whereas the association between conversations and behavior was stronger for boys. A follow-up study found that role-modeling was only effective in some demographic groups, but talking about giving was much more widely effective in promoting generosity (Ottoni-Wilhelm, Zhang, Estell, & Perdue, 2017) [3].

Indeed, results from another study suggest that the effectiveness of role-modeling may be at least partially culturally dependent. In this study, parents in the United States and in rural India modeled either a generous or a stingy donation in front of their three-to-eight-year-old children. When asked to perform a similar task as their parents, children from both cultures were influenced by the stingy modeling, whereas only the Indian children responded to the generous modeling (Blake, Corbit, Callaghan, & Warneken, 2016) [1].

Regardless of how parents seek to socialize their children, there is evidence that parents may significantly influence their children's generosity. A study of over 2,300 adult children found evidence of intergenerational transmission of generosity **(Ottoni-Wilhelm, Brown, Rooney, & Steinberg, 2008) [117]**. In particular, the religious giving of adult children was strongly correlated to their parents' religious giving, while there was a smaller correlation between secular giving by parents and by their children. Another study of over 2,400 people found that parental volunteerism, socialization, and religious participation were robust predictors of volunteerism in adult children **(Caputo, 2009) [59]**. These findings may suggest that policies that encourage generous behavior in parents may lead to an intergenerational cascade of increased generosity.

Rewards, praise, and reinforcement

As mentioned earlier, young children spontaneously help others without being asked or expecting a reward —even when helping out means interrupting an activity they enjoy. In fact, some studies show that offering an extrinsic reward can undercut a child's natural altruistic tendencies.

For example, when 20 month olds were rewarded with a toy after helping an adult reach an object, they were less likely to help again than were children who were not offered a reward or who were offered verbal praise **(Warneken & Tomasello, 2008) [218]**. A study of 6 to 12 year olds found a similar effect: Material rewards decreased children's future helping behavior, although this was seen only in children whose mothers normally relied on instrumental rewards ("if you do this, you get that") **(Fabes, Fultz, Eisenberg, May-Plumlee, & Christopher, 1989) [139]**. This work suggests that offering children material rewards such as toys or candies for generous behaviors is not likely to encourage their generosity, and may even dampen it.

The role of praise in fostering generous behavior in children may be more complicated. In one study, children were asked to donate game winnings to poor children and were either praised for their behavior, told they were "helpful people", or not told anything **(Grusec & Redler, 1980) [227]**. Praise had no effect on the future helping behavior of five year olds, whereas eight year olds were more helpful after being praised for being a helper, and ten year olds were more helpful following both forms of praise. A more recent study in younger children (3 to 6 year olds) found children helped significantly more after being exposed to the idea of "being a helper" than to the idea of "helping," suggesting that encouraging young children to see helping as part of their identity may nurture their generous behaviors (Bryan et al., 2014) [22].

Emotion socialization

As discussed in an earlier section, research suggests that a person's ability to feel empathy may influence their tendency to engage in generous behaviors. So if parents can help nurture empathy in their children, there's good reason to believe they may also be supporting generosity. And, indeed, studies have found that parents can play an important role in socializing their children to recognize their own feelings and the feelings of others, and thus may be able to foster their children's ability to empathize **(Katz, Maliken, & Stettler, 2012)[100]**.

One longitudinal study found that when the mothers of 18-month-old children did more to validate their children's' negative emotions and encourage the expression of these emotions, those kids grew into more empathic 24-month-olds than did the children whose mothers did less to encourage that emotional expression **(Taylor, Eisenberg, Spinrad, Eggum, & Sulik, 2013) [58]**. This study also found that a child's initial empathy level and the growth of their empathy during the study period was associated with their teacher's reports of the child's prosocial behavior toward peers at 72 and 84 months. While this study is correlational and other factors could account for parts of these relationships, its findings suggest that fostering empathy skills in young children could improve their later prosocial behavior.

In another study, parents read picture books to their 18-, 24-, or 30-month-old child before their child was presented with opportunities to engage in various prosocial activities (sharing food or toys, getting an out-of-reach object for an adult, etc.) **(Brownell, Svetlova, Anderson, Nichols, & Drummond, 2013) [111]**. Children of parents who had more frequently asked their child to label and explain emotions while reading the book helped and shared more quickly, and more often, than did the children of parents who did so less frequently or who primarily gave their own labels and explanations for the feelings depicted in the books. Again, these results suggest that parents who encourage their children to identify and discuss emotions may help their children to become more empathic and more generous as they grow up.

Family structure and family transitions

Family structure and family transitions—while not parenting, per se—may also influence future generosity. One study found that high schoolers, especially boys, from single-parent families were less likely to volunteer than those who grew up in married-coupled households. Growing up in poverty was also associated with less volunteering as teens, especially for girls. This study did not find significant relationships between being the child of a teenage parent or having experienced multiple family transitions and volunteering **(Lichter, Shanahan, & Gardner, 2002) [65]**.

Another study found that young adults who had undergone a family transition such as a divorce or a remarriage during their adolescence gave 23 percent less money to charities than did young adults who had not experienced those life events. This effect was not seen among young adults who had had a change in family structure during early or middle childhood. This study also found that young adults who had lived in a low-income family during adolescence were less likely to give to charity or to volunteer (Bandy & Ottoni-Wilhelm, 2012) [13].

F. Socioeconomic Status

How does socioeconomic status influence generosity? Many studies have looked at this topic from various angles, sometimes with conflicting results.

Who gives more? Socioeconomic differences in generosity

In terms of charitable monetary giving, many studies have shown that wealthier people give more money in absolute terms than non-wealthy people do **(Rooney, Steinberg, & Schervish, 2001) [89] (Wiepking & Bekkers, 2012) [87]**, although some evidence suggests that individual giving among the wealthy is highly variable: Some people are exceptionally generous, elevating the overall average level of generosity **(Auten & Rudney, 1990) [61]**.

When it comes to whether poorer or wealthier people are more likely to give to charity, the story becomes murkier. Some studies have found that the probability of giving does not

vary by income level **(Smith, Kehoe, & Cremer, 1995) [144] (Rooney et al., 2001) [89]**, while others find that people with higher incomes are more likely to donate **(Banks & Tanner, 1999) [54] (Schervish & Havens, 1995) [60]**.

Similar research discrepancies exist when it comes to who gives more to charity as a proportion of their income, with several studies reporting a U-shaped curve, meaning the very poorest and very wealthiest give the most as a proportion of their income **(Clotfelter & Steuerle, 1981) [135] (James & Sharpe, 2007) [87]**; other studies have found that the poorest households gave the most as a proportion of their income, to both religious **(Hoge & Yang, 1994) [119]** and secular causes (*Giving and volunteering in the United States, 2001 survey*, 2002). Still another study found a distribution more like a hockey stick, with an upward curve at the right (Bekkers & Mariani, 2009) [2].

The exact relationship between income and charitable giving appears to vary by country. A study looking at measures of generosity between 2001 and 2011 in England and Wales found that people in the top income quintile were the most likely to give to charitable causes (86 percent), while people in the bottom quintile were the least likely to give (65). When looking at relative amounts given, the pattern looks distinct from either of those identified by studies from the U.S.: The very poorest give the highest proportion of their income, but the line then flattens out for the remaining income levels. Interestingly, this study found that self-employed people gave significantly more of their income than did people in other types of jobs (Y. Li, 2015) [2].

What could explain socioeconomic differences in giving?

If poorer households do give a disproportionate amount of their income to charity, what could explain that finding? A study of 1,316 Dutch households found evidence of a "giving standard," meaning that both people from higher income and lower income groups gave similar amounts in the same specific situations; income did not appear to change the "the norms about what is 'right' to donate" **(Wiepking, 2007) [57]**. While this is a small study that may not be universally applicable, it does suggest that people tend to think in terms of absolute numbers when deciding whether to donate instead of considering what proportion of their income they should spend on others.

Laboratory experiments have also examined how socioeconomic status influences generosity. One study found that lower class people were more generous while playing an online version of the dictator game **(Piff, Kraus, Côté, Cheng, & Keltner, 2010) [542]**. Another experiment in this study manipulated undergraduate students' perceptions of their own social class, and then surveyed their attitudes toward charitable donations. Participants who were induced to experience a lower social class rank reported thinking that more of a person's salary should be spent on charitable donations compared to those induced to experience a higher social class rank. A participant's actual social class was also independently associated with their attitudes towards charitable donations: People from poorer families were more generous with a stranger in a dictator game and reported that people should spend more on charitable causes. Other experiments found lower class people exhibited more trusting and prosocial behavior while playing an economic game

with a randomly selected partner and were more likely to help a late partner by taking on more time-consuming tasks in a different activity. The latter effect was mitigated when upper class participants experienced a compassion-induction activity before being asked to select tasks for their partner.

A recent study found that higher income people were only less generous under real or perceived conditions of high economic inequality (Côté, House, & Willer, 2015) [28]. In this study, higher income people from states with high inequality were less generous in a lab experiment than lower income people, but the opposite was seen in people from states with low inequality. Another part of this study found that people did not need to actually have lived in a state with high inequality to experience this effect; when higher income people were told they lived in a state with high income inequality, they gave less, even when the inequality was a fabrication. The researchers posit that this effect might be because inequality leads people to feel a greater sense of entitlement and deservingness that can lead to stinginess.

Together these results suggest that social class shapes people's values and their sensitivity and compassion towards others, but that those attitudes are malleable.

Wealth is often associated with power. A study comprising five laboratory experiments found that when people were put in situations where they felt powerful, they spent more money on themselves than on others **(Rucker, Dubois, & Galinsky, 2011) [143]**. The converse was also true: When participants felt powerless, they spent more money on others. This result occurred despite the fact that both people made to feel more powerful and those made to feel more powerless felt happier when they gave to others. In their discussion, the researchers offered an interesting theory connecting these findings: Poor and/or less powerful people might be more willing to accept their life circumstances if they believe that wealthier and/or more powerful people are less happy, and this could drive them to spend a higher proportion of their incomes on others. The result would be a self-fulfilling prophecy of sorts, as increased giving likely would lead poorer people to be happier than stingier wealthy people.

Volunteering

How does socioeconomic status influence volunteering? A number of studies examining volunteer demographics in the United States have reported a positive association between income and volunteering—with the occasional finding that volunteering peaks in the middle-class—and studies that have looked at the effects of job prestige on volunteering have found that people in more prestigious occupations are more likely to volunteer **(Smith, 1994) [733]**. A 2001 survey found that one in four people from U.S. households with incomes under $25,000 reported volunteering while that number increased to more than one in two for household incomes of $75,000 or more (*Giving and volunteering in the United States, 2001 survey*, 2002). The amount of time spent volunteering was similar across incomes: 22 hours per month for the lowest income group and 27 hours per month for the highest. A similar trend was found for rates of volunteering during a 10-year period in England and Wales: People of higher income and social class were more likely to have

engaged in formal volunteering, possibly because they have more resources and opportunities to do so (Y. Li, 2015) [2].

Donor appeals

A recent study found that wealthier individuals were more willing to give, and donated more money to a charity, when the appeals from that charity emphasized personal agency and the pursuit of individual goals, such as by saying things like, "You=Life Saver, Like the sound of that?" or "Sometimes, one person needs to come forward and take individual action. This is one of those times. Take individual action. Donate today" (Whillans, Caruso, & Dunn, 2016) [2]. Less wealthy individuals, on the other hand, were more likely to give in response to appeals that highlighted communion and the pursuit of shared goals, such as "Let's save a life together" or "Sometimes, one community needs to come forward and support a common goal. This is one of those times. Join your community. Donate today." This suggests that encouraging generosity across the socioeconomic spectrum may be more successful if the messages take into consideration the kinds of appeals that resonate with more versus less wealthy individuals.

G. Media and Entertainment

Most people spend a significant portion of their day engaged with some form of entertainment media, whether it be listening to music, watching TV and movies, or playing video games. Research has found that these media influence various aspects of behavior, and while several studies have shown negative effects of this influence—such as the finding that exposure to violent media increases feelings of aggression—a number of other studies have focused on how exposure to different media can actually lead to increased prosocial behavior.

Television

When it comes to the relationship between media content and behavior, by far the most researched form of entertainment is television. In the 1970s and 80s there were a slew of studies focused on how television programs influence the behavior of children, in particular. A study of preschoolers found that watching *Mister Rogers' Neighborhood* increased prosocial interpersonal behavior—such as cooperating, helping, sharing—for children from lower socioeconomic backgrounds, whereas the same effect was not seen among children from wealthier families **(Friedrich & Stein, 1973) [474]**. A different study found that children spent more time on a helping task after watching an episode of *Lassie* that featured helping than did children who watched a different *Lassie* episode or an episode of the *Brady Bunch* **(Sprafkin, Liebert, & Poulos, 1975) [116]**. Another study found that watching either *Sesame Street* or *Mister Rogers' Neighborhood* significantly increased the prosocial behavior of preschoolers after one week of watching the program **(Coates, Pusser, & Goodman, 1976) [125]**.

A study of older children—8 to 10 year olds—found that those who had been randomly assigned to watch shows with violent, aggressive content gave fewer tokens to charity than

did those who had watched either a neutral or prosocial show; there was also a negative relationship between the number of hours of television the children typically watched per week and how much they donated to the charity, suggesting that television, regardless of content, may also have a dampening effect on generosity (Teachman & Orme, 1981) [9]. However, a different study found that mothers of first graders who frequently watched prosocial sitcoms reported that their children exhibited prosocial behavior—such as showing empathy for troubled people, helping others in need, and sharing—more often than children who viewed prosocial sitcoms less frequently (Rosenkoetter, 1999) [34].

A meta-analysis of 34 studies—and 5,473 children—found that for children who watched prosocial content in an experimental setting (like a lab), there was a moderate positive effect on their behavior: They interacted with others more positively and cooperatively, were less likely to stereotype, were less aggressive, and were more altruistic. That said, the researchers note that there is still much they don't know or is inconclusive when it comes to the effects of media on prosocial behavior. In fact, the researchers bemoan that studies of prosocial media effects are few and dwindling, especially when compared to studies on the relationship between violence and media **(Mares & Woodard, 2010) [195]**.

Music

Music's effect on generosity has been less studied than television's, despite the fact that Americans spend an average of 24 hours listening to music each week (Nielsen, 2015). However, the research that has been done suggests that two aspects of music—its ability to elicit emotions and its lyrical content—may influence generous behavior in listeners.

Several studies have shown that people are more likely to help others when in a positive mood, and music may be a good way to make people feel happier and thus more generous. This connection was borne out in a field experiment conducted on 646 users of a university gym who were exposed to either uplifting (up-tempo, British top-20 recent singles) or annoying (avant-garde computer music) songs and later asked either to sign a petition in support of a charity (a low-demand task) or to distribute leaflets for the charity (a higher-demand task). While almost all subjects from both groups agreed to sign the petition, significantly more of the subjects from the uplifting music group than the annoying music group agreed to help distribute leaflets, suggesting that music that lifts your spirits may also make you more generous **(North, Tarrant, & Hargreaves, 2004) [125]**.

Another way music can influence generosity is via lyrics. Several studies have found that listening to songs with prosocial lyrics can lead to prosocial behavior. For example, one study found that people who had listened to music with prosocial lyrics (such as "peace on earth to everyone that you meet") were significantly more likely to feel more empathy after reading someone else's sad personal essays, to donate to a charity, and to use prosocial words in a task where they were asked to complete word fragments. For example, if a person was presented with the cue "g_____e," they were more likely to report a positive word like "give" over a neutral word like "guide" if they had listened to a song with prosocial lyrics **(Greitemeyer, 2009b) [147]**.

In another study, when compared with people who had listened to music with neutral (not particularly prosocial or antisocial) lyrics, people who had listened to music with prosocial lyrics picked up more pencils for an experimenter who pretended to accidentally spill them, were more likely to agree to do further unpaid experiments and spent more time doing them, and gave more money away in a dictator game **(Greitemeyer, 2009a) [105]**. Further analysis found that this effect was due to increased interpersonal empathy in the people who had listened to the prosocial lyrics.

Another field experiment suggests that this induction of empathy via music with prosocial lyrics could have real-world effects. In this experiment, while 768 French restaurant customers ate lunch or dinner, they were exposed to either music with prosocial lyrics, neutral lyrics, or the regular music played by the restaurant **(Jacob, Guéguen, & Boulbry, 2010) [58]**. Restaurant patrons who had listened to the prosocial music were significantly more likely to leave a tip—and their tips were significantly greater than the other patrons' tips.

Besides listening to prosocial music, several studies suggest that jointly making, listening to, or dancing to music with others can boost prosocial behavior. In one study, four-year-old children behaved more cooperatively and prosocially after joint music making than did children who were engaged in another activity with similar levels of social and linguistic interaction **(Kirschner Sebastian & Tomasello, 2010) [416]**. A study of even younger children—14 month olds—found that they were significantly more likely to help an experimenter after bouncing synchronously with her to the Beatles' song "Twist and Shout" than after bouncing asynchronously (because the experimenter was listening to a sped up track on headphones) (Cirelli, Wan, & Trainor, 2014) [37]. Studies of adults have found that synchronous singing was associated with more cooperation in an economic game **(Wiltermuth & Heath, 2009) [724]**, and synchronized drumming was associated with participants picking up more pencils for an experimenter who had dropped them, compared with participants in an asynchronized drumming condition **(Kokal, Engel, Kirschner, & Keysers, 2011) [96]**.

Video games

There has been considerable interest among researchers and the public in whether playing violent video games can lead to aggressive, violent, or other antisocial behaviors. Many fewer studies have focused on whether playing games where players work together or help each other—so-called prosocial games—can lead to more prosocial thoughts and behavior. Results from those studies that have explored prosocial games, however, suggest that prosocial content may indeed influence behavior.

One study found cross-cultural evidence of a relationship between prosocial video game playing and prosocial real-world behavior **(Gentile et al., 2009) [453]**. Specifically, this study found:

- a correlation between prosocial game-playing and prosocial behavior among Singaporean middle school students;

- prosocial game-playing predicting later increases in prosocial behaviors (such as helping a person in trouble) among Japanese children and adolescents; and
- an association between a prosocial game-playing assignment and prosocial behavior toward another student (choosing easier puzzles for them to complete) among undergraduate students in the United States, whereas this positive association was not seen among students who played violent or neutral games.

Similar to the studies done with prosocial music, a set of experiments found that participants assigned to play a prosocial video game (rather than a neutral game) were more likely to help pick up spilled pencils, to agree to help with an additional experiment (and spend more time doing that experiment), and to help a woman who was being harassed by an ex-boyfriend **(Greitemeyer & Osswald, 2010) [281]**, again suggesting that playing prosocial video games could induce behaviors with positive real-world consequences. However, when another group repeated some of the experiments from this study they failed to find a relationship between playing violent or prosocial video games and prosocial behavior (although this study did not use all of the measures of prosocial behavior included in the original study) **(Tear & Nielsen, 2013) [57]**.

A meta-analysis of 98 studies looking at the social outcomes of video game content found that "[w]hereas violent video games increase aggression and aggression-related variables and decrease prosocial outcomes, prosocial video games have the opposite effects" **(Greitemeyer & Mügge, 2014) [188]**. In particular, studies have found that playing prosocial videogames increased prosocial thoughts **(Greitemeyer & Osswald, 2011) [63]**, increased interpersonal empathy, and decreased feelings of pleasure at another person's misfortune **(Greitemeyer, Osswald, & Brauer, 2010) [136]** in lab experiments.

These findings suggest that video game content may have consequences on how players treat other people—both in positive and negative ways. In fact, researchers have suggested that video games could potentially be a useful tool for increasing helping behaviors in children, particularly in teens. Playing is almost ubiquitous among teens (a 2007 survey found that 97 percent of American teens play video games (Lenhart, Jones, & Macgill, 2008)), and the video game format—which exposes players to modeling, rehearsal, and reinforcement—offers "excellent conditions for learning to occur**" (Greitemeyer & Osswald, 2010) [288]**. Of course, that all depends on teens being willing to play prosocial games in the first place (at least when not assigned to do so in an experiment).

H. Demographic and Geographical Factors

Research suggests that there are a number of demographic and geographical factors that influence generosity. These include aspects like regional levels of trust as well as aspects that might not normally be thought of as impacting generosity, such as city size and diversity.

One line of research has investigated the relationship between generosity and city size. A study of prosocial behaviors, including voting and organ donation, found that while these behaviors do increase with city size, the rate of scale is not consistent—some, such as living organ donation and voting, scale linearly while others, such as deceased organ donation, increase superlinearly, meaning that as city size increases, these behaviors increase even more dramatically (Arbesman & Christakis, 2011) [8].

A different study of 126 college students found students who were raised in an urban environment provided significantly more help to an actor pretending to have hurt her ankle (Weiner, 1976) [35]. However, other studies have found that people in rural environments exhibit more prosocial behaviors. A meta-analysis of 65 experiments found that people who lived in rural areas engaged in more helping behaviors compared to those who lived in urban areas **(Steblay, 1987) [114]**, and another study of people who were raised in rural or urban China found that individuals raised in rural environments were more generous to strangers and distant acquaintances (Ma, Pei, Jin, & De Wit, 2015) [5].

Regional differences in qualities such as well-being and trust also appear to predict differences in generosity. One study found that the states in the United States where people reported the highest subjective well-being (used as a measure of happiness) also had the most people per capita who had donated a kidney to a stranger (Brethel-Haurwitz & Marsh, 2014) [12], and a study of 30,000 people in 160 regions across 19 countries found that people living in regions with high levels of trust gave more money to charity and volunteered more (Glanville et al., 2015) [3].

When it comes to diversity, a study that examined how ethnic and religious diversity may influence charitable donations found that in localities with more ethnic diversity, households donated less money to charity, by about 36 dollars a year; however, overall these localities did not have a lower percentage of households that actually made charitable donations. The impact of religious diversity was weaker: although more religious diversity was associated with less money donated, this result was possibly driven by the observation that Catholics donate more when a higher proportion of the population where they live is Catholic (Andreoni, Payne, Smith, & Karp, 2016) [12].

One must be cautious, however, when interpreting regional differences in charitable giving. A meta-analysis of the literature on regional differences found that some results were due to differences in the quality of data from different countries, other confounding variables such as tax laws or wealth distribution, or improper statistical modeling (Bekkers, 2015) [0].

I. Governmental Factors

Another active area of research is the impact that government grants to charities have on private donations. In particular, there has been interest in determining whether people give less when the government gives more, a phenomenon known as “crowding out” (for reviews see (Payne, 2009) [36] and (Tinkelman, 2010) [16]).

Results from studies on crowding out have been shown conflicting results. For example, a study of more than 8,000 U.S. charities found that crowding out had a large impact: Charities that had received more government grant money received an average of about 72 percent less money from private donors, primarily due to reduced fundraising by the charities **(Andreoni & Payne, 2011b) [201]**. This suggests that policies that require matching of government grants with private funds might reduce the effects of crowding out. However, another, more detailed study of 6,000 Canadian charities found that crowding out was not due to less giving by individuals but was instead mostly due to decreased giving from other charities and foundations, as well as reduced revenue from special fundraising activities such as galas and sponsorships (Andreoni & Payne, 2011a) [16]. Importantly, a recent meta-analysis found that, of the studies that have looked at how government support influences private charitable donations, "about two-thirds of previous estimates find a negative correlation (crowding-out), while one third of the estimates find a positive correlation (crowding-in)" and that the "results are strongly shaped by the research methods that are used" (Arjen De Wit & Bekkers, 2017)[6]. Thus the jury is still out on the extent to which crowding out actually occurs.

In a different vein, a recent study found that Americans who reported living in a place with strong public institutions—courts and police, in particular—were more generous toward strangers in an economic game (Stagnaro, Arechar, & Rand, 2016) [6]. A second part of the study, where the strength of an "institution" was manipulated by changing the frequency and amount participants would be punished for not cooperating in an economic game, showed that more enforcement of cooperation led players to be generous in a subsequent, unrelated game. Together, these results suggest that living with government institutions that we can trust to enforce certain social norms may have a spillover effect that leads individuals to be more generous in their day-to-day lives.

J. Timing and Setting of Solicitations

Research suggests that when it comes to charitable giving, the timing and setting of the solicitation can impact our generosity.

Timing

Time impacts generosity—even just getting people to think of time. In one study, asking people "How much time would you like to donate?" before asking for a donation to a charity increased donations, and this effect appears to be due to a mindset activated by thinking about time: "Considering time appears to activate goals of emotional well-being and beliefs involving personal happiness," write the authors **(Aaker & Liu, 2008) [258]**.

Another study found that people were more cooperative in an economics game when they were forced to make their decision quickly, whereas instructing participants to reflect and decide more slowly decreased generosity **(Rand, Greene, & Nowak, 2012) [621]** (see caveats in registered replication report (Bouwmeester et al., 2017) [10]); a follow-up study found that time pressure even increased cooperation in a competitively framed game **(Cone & Rand, 2014) [54]**.

However, a different type of time pressure has been shown to reduce helpful behavior. A study of Princeton seminary students who passed an actor pretending to need help found that only 10 percent of the students helped the person when they were late to give a talk; by contrast, 63 percent of the students stopped to offer help when they had time to spare **(Darley & Batson, 1973) [1561]**.

In a slightly different but still time-related vein, a recent study suggests that creating some time between when you ask someone to donate and when they would actually make their gift might help convince reluctant donors to say "yes." This study found that giving participants the ability to decide to donate to a charity, but allowing them to choose whether the actual donation was made that day or on a later date, increased the overall number of people who decided to donate (Andreoni & Serra-garcia, 2016) [0]. The researchers speculate that this was because the donors received the immediate positive reward of deciding to help the charity, but the pain of actually paying the money was delayed and thus discounted.

Setting

Research suggests that a setting may also influence people's propensity for generosity. One experiment found that people donated more money when they were in an orderly environment (though they were more creative in a disorderly one) **(Vohs, Redden, & Rahinel, 2013) [51]**. Another study found that people who were immersed in a more natural setting—such as a room filled with plants—were more generous than those immersed in less natural settings **(Weinstein, Przybylski, & Ryan, 2009) [259]**.

VII. Limitations and Future Directions

While this white paper discusses many of the discoveries that have been made in the science of generosity, it also illustrates that this topic remains an active area of research with many open questions. Below are a few of the limitations of the research presented, as well as some of the most promising future directions.

Steps to increase the trustworthiness of research

One of the most promising future directions for the science of generosity is also one of the limitations of some of the research included in this white paper. As mentioned in the introduction, there has been a growing concern among researchers about a number of methodological issues, such as insufficiently large sample sizes, improper use of statistics, and the "file drawer problem" (experiments with negative results are often not published). Fortunately, a number of journals have introduced registered reports that ensure that a study design is sufficiently rigorous and that the results will be published regardless of study outcome (Center for Open Science, n.d.). According to the Center for Open Science, 77 journals currently accept registered reports.

Additionally, a group called Curate Science is working to crowdsource and curate information about the methodological transparency and the analytic reproducibility of studies, as well as to present the extent to which particular findings in psychology have been replicated (Curate Science, n.d.).

Further explorations into the virtue of generosity

In the introduction, we mention that the University of Notre Dame's Science of Generosity Project defined generosity as "the virtue of giving good things to others freely and abundantly. … What exactly generosity gives can be various things: money, possessions, time, attention, aid, encouragement, emotional availability, and more"; however, most of the studies discussed in this white paper did not examine the extent to which people give—be it in the form of charitable gifts, aid, or emotional availability—freely (and not at the behest of a laboratory experiment or charity appeal) or abundantly. Future studies that examine the proportion of available time or money that people freely give to others—and the reasons that motivate some people to give so abundantly—could help to bolster the existing research (or raise new complications and questions).

The generous brain

Teasing apart the brain circuits involved in different forms of generosity remains an active area of research, thanks in part to continuing advances in brain imaging technology. One question yet to be answered is how the dopamine-based reward system and the oxytocin-based caregiving systems in the brain interact to motivate (or inhibit) generosity in complex real-life situations (Marsh, 2016) [7].

Empathy interventions

A more applied psychological topic that will likely be a subject for several future studies is developing behavioral interventions to increase empathy—and thus, likely, generosity—toward out-group members. These interventions could involve cultural elements like reading fiction or listening to particular music **(Decety, 2015) [49]**.

Volunteering and health

While research strongly suggests that helping other people, at least through formal volunteering, is likely good for both physical and psychological health, future studies will need to be done with diverse populations to further clarify what scenarios lead to the best outcomes, whether these outcomes persist in the long-term, whether they extend to informal volunteering and other caregiving scenarios, and what the underlying mechanisms are for these benefits.

One particularly interesting possibility put forth by Stephanie L. Brown and R. Michael Brown is that health problems associated with social isolation and loneliness may stem from decreased engagement of the biological caregiving system, something that could hypothetically be ameliorated with increased time spent helping others **(S. L. Brown & Brown, 2015) [50]**. Highlighting the likely health and psychological effects of volunteering and community service might help increase the percentage of people who volunteer each year, a number that has been steadily decreasing over the past decade in the United States (Kiersz, 2016) and the United Kingdom (Office of National Statistics, 2017).

Ways to increase charitable donations

When it comes to research on charitable donations—an area of obvious practical significance—a number of questions remain about how people can be motivated to give more money to charity and to give more frequently. According to economist Mark Ottoni-Wilhelm, two of the most promising directions in this area are how expressions of gratitude influence giving and how time pressures (including the busyness of modern life) change people's willingness to give or perform other acts of kindness (personal interview).

Another promising future direction in this area, according to psychologist Elizabeth Dunn, is to find ways to structure giving experiences so they are more emotionally rewarding—perhaps by making people feel more connected to charities or highlighting the impact that their donations make (personal interview). Based on her research, increasing the joy that comes from giving should result in more future donations.

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