

Do we become more prosocial as we age, and, if yes, why?

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Abstract

Older adults contribute—through charitable donations or volunteering—more to the common good than younger adults, an age difference that has profound society-level implications. Yet, the reasons for this difference are not well understood. Evidence suggests that a purely altruistic concern for the common good is a major motivation for prosocial behavior, and that this concern increases across adulthood. We argue that this finding, and prosocial behavior in general, is better understood using a value-based decision framework than through traditional dual-process accounts. Based on the value-based decision approach we derive specific hypotheses about lifespan changes in motivation or resources as factors that explain why older adults show an increased concern for the well-being of others.

Keywords: Aging, prosocial behavior, motivation, decision making, neuroimaging

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The concern about the demographic aging of societies in many western countries reflects the view that older adults draw resources without making substantial contributions. Yet, societies' well-being depends not only on what individuals produce at the work place or pay as taxes. Contributions to the common good, cooperation, and trust in institutions are also important ingredients for both well-functioning societies (McCulloch, Kimeldorf, & Cohen, 2008) and individuals' happiness (e.g., Dunn, Aknin, & Norton, 2008). On average, older adults have accumulated more wealth and have more time than their younger counterparts (Huggett, 1996), leaving them particularly well-positioned to positively affect society through charitable donations, volunteering, or civil engagement. It is therefore important that we understand how and why prosocial behavior changes across adulthood (see also Midlarsky, Kahana, & Belser, 2015). We synthesize here some of the relevant theoretical viewpoints of prosociality as a multifaceted construct, and relate them to extant empirical results. Our goal is to arrive at a framework that can guide future research on adult prosocial development.

The Dual Systems View

One possible starting point for understanding how prosocial behavior develops across adulthood is the dual-systems perspective. According to this approach, prosocial behavior can emerge when the automatic System 1, which is driven by immediate rewards, is dominated by the deliberative System 2 (Moll, et al., 2006; Moore & Loewenstein, 2004). For example, the prevalent theory of criminal behavior (arguably the opposite of prosocial behavior) is that a lack of System-2 regulatory functions leaves System 1's impatient quest for immediate rewards unopposed (e.g., Gottfredsen & Hirschi, 1990). Applying this perspective to adult development, age-related declines in System-2, cognitive control functions (Salthouse, 1990; West, 1996)

should lead to an increase in antisocial tendencies with age. Supporting this perspective, some expressions of anti-social tendencies do indeed appear to increase with age: Older adults show more racial stereotypes than younger adults, and such age-related differences are mediated by age differences in inhibitory control (e.g., von Hippel, Silver, & Lynch, 2000).

Yet, at odds with a dual-systems account, many clearly negative behavioral tendencies, including criminal behavior, decline steeply throughout adulthood (Cornelius, Lynch, & Gore, 2017; Vachon, Lynman, Widiger, Miller, McCrea, & Costa, 2013). Furthermore, prosocial personality traits (e.g., Roberts, Walton, & Viechtbauer, 2006) and corresponding behavior increase across adulthood. Specifically, both survey studies (Bekkers & Wiepking, 2011) and experimental work indicate that charitable giving and volunteering become more prevalent across adulthood, up to about age 70 (Freund & Blanchard-Fields, 2014; Midlarsky & Hannah, 1989). Thus, for a full understanding of how prosocial tendencies develop across adulthood we need to look beyond the dual-systems model. However, we will revisit a specific variant of this model when we discuss the role of cognitive constraints.

Value-Based Decisions

An alternative to the dual-systems approach is that prosocial behavior is the result of value-based choice involving the same general cost-benefit processes that drive any decision (Berkman, Hutcherson, Livingston, Kahn, & Inzlicht, 2017; Hutcherson, Bushong, & Rangel, 2015). The value-based decision perspective shifts the focus away from the suppression of either antisocial or prosocial tendencies as an explanatory factor, and towards the identification of both positive and negative incentives of prosocial behavior.

This approach however, faces its own obstacles. In particular, it is difficult to apply a cost-benefit framework to explain prosocial behavior without relying on potentially biased, self-

report information or on circular reasoning, where underlying motives need to be inferred from observed choices. In fact, Eisenberg et al. (2006) have suggested that it is “usually (...) impossible to differentiate between altruistically motivated actions and actions motivated by less noble concerns” (p. 647).

To address this issue, Harbaugh et al. (2007) used a paradigm in which people observed real money transfers by a third party either to themselves or to a charity, while measuring reward-related activity using fMRI. Results revealed reward-related activity both for money going to oneself *and* the charity. Importantly, the difference between the reward-area response to money going to the charity minus the response to money going to oneself can be interpreted as the net utility difference between witnessing either the charity or oneself being better off. The size of this “neural utility index” was a robust predictor of actual voluntary giving choices. Because this index is derived from a situation in which people observed the transfers in a completely passive manner, it cannot reflect impure altruistic motives, such as signaling wealth or character. Any impure altruistic motives require that the individual can claim responsibility for the prosocial behavior (Andreoni, 1990). In other words, the neural utility index should only reflect *pure-altruistic* concerns for the public good. Further, the fact that it predicts actual prosocial choices clearly demonstrates that such choices can be understood in terms of value-based decisions, rather than as a competition between reward-based and rule-based systems.

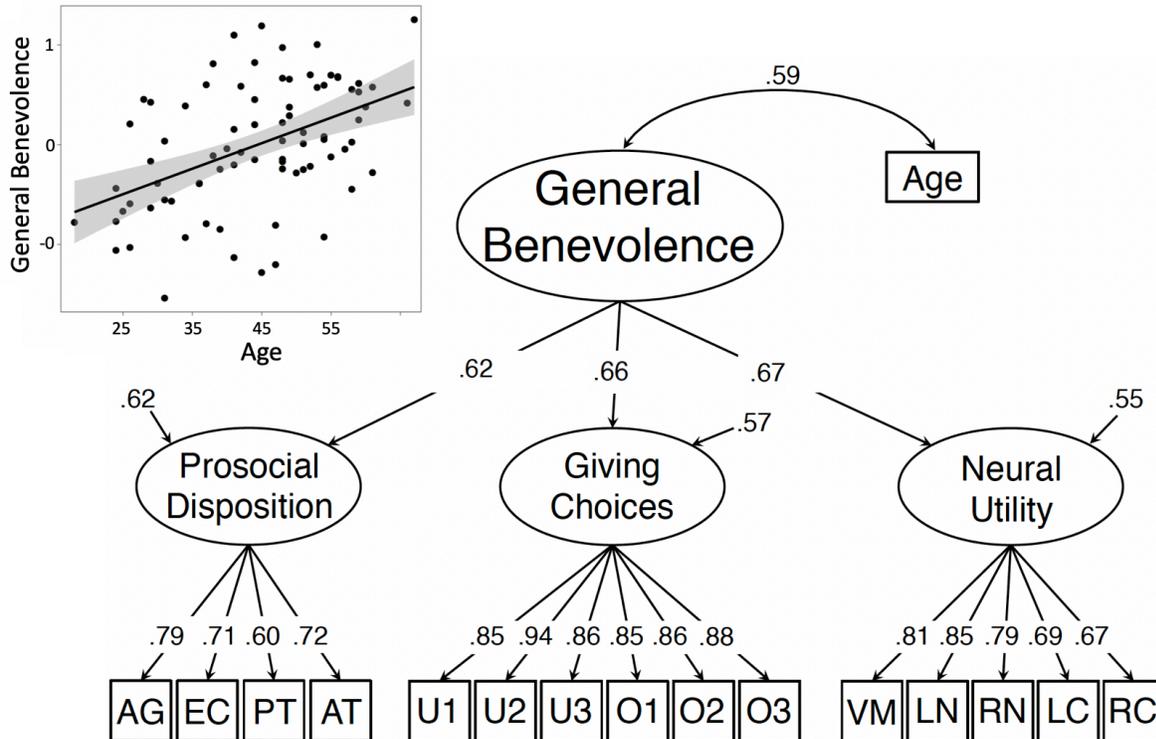


Figure 1. A common factor (general benevolence) can explain interindividual variability in a) self-report measures (AG=agreeableness, EC=emotional empathy, PT=perspective taking, AT=altruistic motivation), b) incentive-compatible giving choices in a version of the dictator game (U1-3=different unobserved choices, O1-3=different observed choices), and c) the activation differences in reward areas (VM=ventro-medial prefrontal cortex, LN and RN=left and right nucleus accumbens, LC and RC=left and right caudate) between passively observing money going to a charity versus money going to oneself (i.e., neural utility index). The general benevolence factor also shows a robust relationship with age. The figure is simplified from Hubbard et al. (2016).

Hubbard et al. (2016) used the same logic in a sample of 20-60 year-olds and included also an assessment of altruistic choices in a dictator game, as well as self-report measures of prosocial personality tendencies (e.g., agreeableness, empathy). Structural-equation modeling indicated that variability across these three measurement domains was well explained by a single “general benevolence” factor (see Figure 1). The variability in this latent factor is constrained by the neural pure altruism index and, therefore, represents pure-altruistic tendencies. Most importantly, general benevolence showed a strong increase across adulthood. Thus, the question

about the incentives for altruistic behavior within a value-based framework can be addressed using designs like the ones described above (Morelli, Sacchet, & Zaki, 2015). The results clearly point to pure-altruistic motives as an important driver of prosocial behavior, as well as to age-related strengthening of such motives.

Broadening the Framework

The research presented above does not offer “ultimate reasons” for why people experience particular incentives more or less positively and why these value-assignments might change with age. However, the value-based decision perspective provides a framework for identifying potentially critical drivers of prosocial behavior: Such behavior results from a cost-benefit evaluation, where all relevant proximal and distal costs or rewards are funneled into a common “valuation currency,” which in turn can be traced by recording activity in neural reward areas (see Figure 2). Proximal factors reflect the state of critical decision values at the time of the choice, such as: How much value is derived from the recipient of an altruistic act being better off? Or, on the cost side: How “painful” is it to the donor to give up a given resource? One interesting question in this context is to what degree older adults give more because they simply care less about money for themselves (i.e., lower cost) or because they anticipate greater reward (i.e., higher reward) from prosocial acts than younger adults? Findings from Hubbard et al. (2016, supplemental material) suggest that the reduced reward activity to self-gains *and* the increased reward activity to charity-gains both relate independently to age.

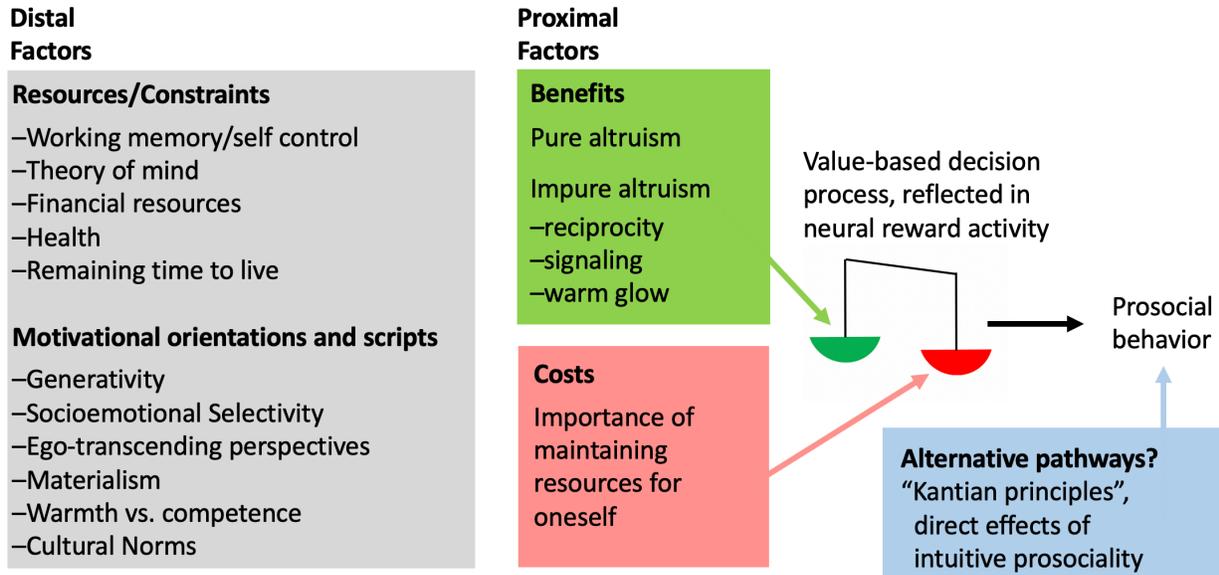


Figure 2. Applying the value-based decision framework to explain prosocial behavior. Distal factors specify competing hypotheses about motivational factors or resources/constraints that can affect the more immediate positive and negative incentives associated with prosocial actions (proximal factors), which in turn determine the final calculation of benefits and costs when choosing between prosocial or egoistic options. A strong prediction from this framework is the effect of distal and proximal factors (when adequately measured) on prosocial behavior should be only indirect, namely through the valuation of prosocial and egoistic options. This framework also allows examining alternative pathways to prosocial behavior (e.g., Kantian Principles, direct effects of intuitive prosociality), by testing for direct effects on prosocial behavior that are independent from valuation. Note, we list here potential factors, not an exhaustive list.

We believe that distal factors (see Figure 2) are particularly critical for understanding age differences in prosocial behavior. They reflect the more stable aspects that constrain how the proximal parameters are expressed, including cognitive abilities such as working memory or theory of mind, health, financial resources, or remaining life time, as well as enduring goals and motivational orientations. Many of these factors can undergo gradual changes across adulthood (e.g., Baltes, Lindenberger, & Staudinger, 2006), and potentially explain age-related trends in altruistic behavior. For illustrative purposes, we focus here only on a few important hypotheses.

Resources and Constraints

An obvious resource to consider is wealth. Older adults have accumulated on average greater wealth (Huggett, 1996) and therefore may give more, simply because the cost-side of the giving equation carries less weight for them than for younger adults. However, three different types of evidence speak against life-cycle changes in wealth as the main driver of changes in giving. First, survey studies of actual monetary giving show that age-related differences are robust even after controlling for wealth (for a comprehensive review, see Bekkers & Wiepking, 2011). Second, positive age differences also arise when prosocial tendencies are expressed without incurring financial costs (Hubbard et al., 2016, Freund & Blanchard-Fields, 2014; Midlarsky & Hannah, 1989). Third, the literature on the relationship between wealth and giving suggests that if anything, poor people give proportionally more than people of greater wealth (Independent Sector, 2002; Piff, Kraus, Côté, Cheng, and Keltner, 2010). While age differences in wealth alone are unlikely to be a critical factor in explaining age differences in prosocial behavior, we will return in the next section to the potential role of resource demands in shaping motivational orientations.

As mentioned when discussing the dual-systems approach, age-related changes in cognitive functioning might also affect prosocial tendencies. Interestingly, direct tests of the dual-systems model of prosocial behavior have, paradoxically, revealed that cooperative behavior increases when System-2 processes are weakened via experimental manipulations (e.g., through cognitive load; Rand, 2016). This pattern has led to a revised dual-systems hypothesis, namely that most people are “intuitively” prosocial (i.e., based on System 1) and that it is only through additional deliberation that these intuitive tendencies can be suppressed (Zaki & Mitchell, 2013). Such a revised dual-process hypothesis might explain age-related differences in

prosocial behavior: Cognitive decline weakens deliberative processes (i.e., similar to the experimental manipulations of cognitive load), leading to a net increase of prosocial behavior, even without any motivational changes. Yet again, this model is not sufficient to explain age-related differences in prosocial behavior: Survey results and experimental data often show positive relationships between cognitive status and real-world giving (e.g., Bekkers & Wiepking, 2011; James, 2011). Moreover, the intuitive-prosociality model is only relevant for decision situations where altruistic and self-serving options are in direct competition. However, the fact that age differences in prosocial tendencies are also expressed in non-decision situations, such as in the neural, pure-altruism index or in self-report measures (see Figure 1; Hubbard et al., 2016), is consistent with genuine motivational changes as key factors behind changes in prosocial behavior.

While there may be no simple relationships between financial resources or cognitive functioning and age differences in prosocial behavior, it would be premature to ignore the potential contributions of such factors. The value-based decision framework allows us to examine specific, competing predictions about the effects of resources and constraints. For example, the dual-systems version of the intuitive-prosociality hypothesis suggests that cognitive control directly suppresses prosocial tendencies by short-cutting cost-benefit calculations. In contrast, the value-based decision framework predicts that any effect of control is mediated through cost/benefit parameters, for example by focusing attention on certain value-modulating aspects over others (e.g., Berkman et al., 2017).

Motivational Orientations

In discussing motivational orientations, we need to appreciate how these are shaped by and interact with available resources. This is particularly salient in the context of generativity,

the concern and engagement for the well-being of the next generation, a concept closely related to prosociality. According to the influential developmental theory of Erikson (1982), generativity emerges in middle adulthood. In fact, empirical evidence supports that generative behavior peaks in middle adulthood (e.g., McAdams, de St. Aubin, & Logan, 1993; McAdams, et al., 1997).

The lower generativity in younger adults might be due to their need to establish themselves professionally (leaving little time for volunteering) and to accumulate financial resources in order to provide for themselves and their family (leaving little money to give away). Thus, the primary motivational orientation in young adulthood may be to achieve personal gains rather than to be generative. In contrast, middle-aged and older adults often have attained a level of material security that allows them to donate money, and they have more time to help others (Freund & Blanchard-Fields, 2014), potentially inducing a shift in expectations about what it means to be a productive member of society from working and raising a family towards generativity. In line with these considerations, Midlarsky and Kahana (1994) suggested that generativity is a central, normative script in old age.

Confirming this script, generative *concerns* continue to be high until old age. However, generative *behaviors* decrease (McAdams, et al., 1993; McAdams, et al., 1997). Likely, this is the case because older adults have fewer opportunities to engage in generative behaviors after retirement or when facing health-related problems. In fact, Freund and Blanchard-Fields (2014) found that when opportunities for generative behavior were equalized through an endowment, older adults were more likely than young adults to donate to charity. Moreover, older adults pursued a complex problem-solving task in ways that expressed concern for the ecology (as a form of generativity) and at a cost of personal, financial gains.

Turning to the resource of time, Socio-Emotional Selectivity Theory (SST) by Carstensen (e.g., Carstensen, Charles, & Isaacowitz, 1999) posits that older adults, because of a shorter remaining life time, focus more on the hedonic value of the present and, therefore, are more likely to engage in emotionally meaningful social exchanges than younger adults. SST has not been applied to age-related changes in prosocial behavior. In fact, the focus on immediate, hedonic experiences may appear inconsistent with giving up resources in the service of the long-term, greater good. Yet, a somewhat broadened interpretation of what it may mean to seek emotionally meaningful exchanges may allow to encompass prosocial behavior. Specifically, contributing to the wellbeing of others (or future generations) may be one way in which older adults can experience meaning and connection with the social world and thus increase their hedonic level. Supporting this perspective, charitable giving is experienced as more emotionally gratifying to older than younger adults (Bjälkebring, Västfjäll, Dickert, & Slovic, 2016). Also consistent with the role of a limited time horizon in promoting prosocial behavior, Jonas, Schimel, Greenberg, and Pyszczynski (2002) report that experimentally induced awareness of one's mortality boosts prosocial attitudes and behavior. At the same time, Freund and Blanchard-Fields (2014) found no relation between individual differences in future time perspective and in charitable behavior. Thus, the role of the perceived availability of time as a potential key factor for prosociality requires further investigation.

Changes in prosocial behavior across the life span are likely co-determined by resources and motivational factors. Currently, there is not sufficient empirical evidence to distinguish between the competing explanations of age-related changes. However, assuming that key aspects of each theory can be adequately operationalized and measured (Carstensen et al, 1999;

McAdams & de St. Aubin, 1992) each construct's relevance for the cost-benefit calculus can be tested within the value-based decision framework (see Figure 2).

Qualifications and Outlook

The robust evidence about the role of cost-benefit calculations in altruistic choices justifies a broad research agenda on prosocial behavior across the lifespan within a value-based decision framework. Yet, we do not want to rule out the possibility of alternative routes towards altruistic behavior. For example, a follower of Kantian moral philosophy might suggest that general principles can drive behavior irrespective of internal costs or rewards (Batson, & Powell, 2003). While such explanations are not accounted for within our framework, it nevertheless provides--at least in principle--an analytic strategy for testing them. Specifically, the neural-level cost/benefit indicator should mediate the predictive effects on giving behavior from all of those factors that enter the cost-benefit analysis--leaving no room for direct predictive effects. Thus, to test for alternative routes towards proactive behavior one would need to measure their strength on an individual level (e.g., Kantian principles) and test for direct effects on prosocial behavior (see Figure 2).

We had focused here on charitable giving, mainly because in the adult age range, it is the most-researched form of prosocial behavior. However, we believe that our conclusions are relevant for a broader range of prosocial activities, including volunteering, cooperation, civic engagement, or helping behavior. In our own work, we have pooled information across self-report, behavioral, and neural data (see Figure 1) and the emerging general benevolence dimension correlated with self-reported, real-world giving and volunteering activities. This is also consistent with recent evidence that a number of different public-good, cooperation, and trust games, together with self-report and behavioral indicators of prosocial behavior, form a

“positive manifold”, which in turn points to a domain-general and temporally stable “cooperative phenotype” (e.g., Peysakhovich, Nowak, & Rand, 2014). In addition, prosocial acts that are driven through non-altruistic motives (e.g., signaling or hope for reciprocity), while not related to a genuine concern for others, can be nevertheless captured within the value-based decision framework (see Figure 2).

The great majority of the existing research on adult age differences in prosocial behavior relies on cross-sectional data. Therefore, to distinguish cohort effects from genuine developmental changes, longitudinal assessments of altruistic behavior are a particularly critical next step. There is evidence for longitudinal changes in prosocial tendencies that are consistent with reported cross-sectional differences in personality measures (Roberts, Walton, & Viechtbauer, 2006) or in empathy (Oh, Chopik, Konrath, & Grimm, 2019). Additional longitudinal studies that include the entire range of theoretically important variables (see Figure 2) are needed to distinguish between actual developmental change and the role of historical context. Similarly, we also have to consider cultural variations in available resources, or in cultural norms and scripts (House et al., 2013). Again, we propose that such differences are likely to affect prosocial behavior (and age differences therein) indirectly, namely through the immediate incentives associated with prosocial behavioral options (see Figure 2).

To conclude, existing evidence offers an affirmative answer to the first part of the question in our title—do we become more generous with age? With regard to the second part of the question—why does this happen?—we currently can give a partial answer: Older adults’ seem to genuinely care more about the common good or the wellbeing of others than do young adults. For the larger, and still unanswered question, why these motivational differences occur, the

value-based decision approach offers a framework within which specific predictions about the origins of lifespan changes can be developed and tested.

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Recommended Readings

- A representative study that illustrates how neuroimaging can be used to assess the role of pure altruistic motivation in prosocial behavior across the life-span: Hubbard, J., Harbaugh, W. T., Srivastava, S., Degras, D., & Mayr, U. (2016). A general benevolence dimension that links neural, psychological, economic, and lifespan data on altruistic tendencies. *Journal of Experimental Psychology: General*, *145*, 1351-1358.
- A concise introduction and accessible summary of the value-based decision approach is provided by: Berkman, E. T., Hutcherson, C. A., Livingston, J. L., Kahn, L. E., & Inzlicht, M. (2017). Self-control as value-based choice. *Current Directions in Psychological Science*, *26*, 422-428.
- A useful recent review that focusses on generativity as a normative aspect of old age: Midlarsky, E., Kahana, E., & Belser, A. (2015). Prosocial behavior in late life (pp. 415-432). In D. Schroeder & W. Graziano (Eds.), *Handbook of Prosocial Behavior*, New York: Oxford University Press.

Figure Captions

Figure 1. A common factor (general benevolence) can explain interindividual variability in a) self-report measures (AG=agreeableness, EC=emotional empathy, PT=perspective taking, AT=altruistic motivation), b) incentive-compatible giving choices in a version of the dictator game (U1-3=different unobserved choices, O1-3=different observed choices), and c) the activation differences in reward areas (VM=ventro-medial prefrontal cortex, LN and RN=left and right nucleus accumbens, LC and RC=left and right caudate) between passively observing money going to a charity versus money going to oneself (i.e., neural utility index). The general benevolence factor also shows a robust relationship with age. The figure is simplified from Hubbard et al. (2016).

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