

Introduction to the Special Issue on Prosociality in Adult Development and Aging: Advancing Theory Within a Multilevel Framework

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Prosociality refers to a broad set of behavioral, motivational, cognitive, affective, and social processes that contribute to, and/or are focused on, the welfare of others. This overview summarizes 10 articles included in the special issue on this topic. In discussing this research relative to existing theories, we situate this work within Penner et al.'s (*Annual Review of Psychology*, 56, 2005, 365–392) multilevel framework that recognizes distinct yet integrated levels of analysis to characterize micro- (i.e., intraindividual), meso- (i.e., interpersonal), and macro- (i.e., sociocultural and organizational contexts) level effects. While there is some evidence for lifespan continuity in prosocial dispositions at the micro level, the influences of long-term learning and socialization processes at the meso and macro levels are likely to be maximized in older age. Aside from formal volunteering, the adult lifespan development of prosociality has only recently received attention, especially with respect to influences beyond the micro level. This special issue encompasses research examining developmental change and stability in prosociality that collectively cuts across levels of analysis to inform theories in both adult development and aging and prosociality more generally. We propose future directions that take an integrative approach to understanding the development of prosociality by considering interactions among micro, meso, and macro levels.

Keywords: prosociality, altruism, cooperation, goal orientation

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Prosociality is defined as dispositions, motivations, and behaviors that are focused on the welfare of others (Eisenberg & Miller, 1987; Eisenberg et al., 2014). We take it to be an overarching term encompassing a broad set of intraindividual, interindividual, and sociocultural processes, including but not limited to helping, cooperating, donating, mentoring, volunteering, altruism, empathy, and trust. According to Penner et al. (2005), the concept of prosociality can be theoretically and empirically situated across three investigative levels: (a) the *micro level* is intraindividual and encompasses the origin of, and individual differences in, prosocial tendencies/dispositions; (b) the *meso level* is interpersonal and focuses on helper-recipient dyads in context (i.e., one person helping another); and (c) the *macro level* relates to prosocial action of an individual in the context of groups or large organizations, including volunteering and cooperation. Penner et al.'s (2005) multilevel perspective highlights the need for integration across the three levels of analysis to

understand the nature of prosociality, calling for a diverse set of theoretical frameworks ranging from evolutionary psychology and behavioral genetics to developmental, personality, social, cognitive, and organizational psychology. Influences at each level vary with movement through the life course. For example, it is now well accepted that (a) dispositional tendencies are shaped over the lifespan by (social) experience (Roberts & Mroczek, 2008; Wrzus & Roberts, 2017), (b) there is multidimensional and heterogeneous change in physical and cognitive (Gerstorf et al., 2006), as well as financial (Huggett et al., 2011) resources, and (c) the structure of social institutions can, to some extent, differentially define the roles available with age (Riley & Riley, 2000). Thus, an understanding of developmental change and stability in prosociality would be expected to inform theories both in adult development and aging and in prosociality.

There is evidence that prosocial intentions, at the micro level, reflect a stable trait in line with genetic underpinnings and evolutionary theory, while also varying at the meso and macro levels as a function of context, culture, and socialization (Eisenberg et al., 2014; Penner et al., 2005). Thus, prosocial intentions would be expected to show some lifespan continuity, while the influences of learning and socialization processes are likely to be maximized in older age. However, prosociality has rarely been studied in older adults until recently. In the context of Penner et al.'s (2005) multilevel perspective, existing investigations of aging and prosociality have largely focused on personality traits at the micro level, and formal volunteering at the macro level, and suggest intact or even increasing prosociality with age (for a review, see Ebner et al., 2017).

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This special issue reflects a trend towards incorporating meso-level behavioral analyses of recipient–helper dyads, as well as more diverse measures at the micro and macro levels, such as neural processes and cooperation, respectively. Articles in this special issue also represent research that integrates across levels of analysis, thus contributing to an understanding of how the different levels function interdependently to determine who helps and when, as well as why help is likely. The current scarcity of scientific knowledge on the lifespan trajectory of prosociality, its underlying mechanisms (e.g., neural processes), and outcomes (i.e., costs and benefits) represents a set of significant gaps in the literature. Also relatively unexplored are the differential influences across the lifespan of sociocultural and contextual factors, such as the recipient of help (e.g., charity vs. loved one), forms of assistance (e.g., financial vs. emotional), and life stage (e.g., work vs. retirement, grandparenthood, and Third vs. Fourth Age). The articles in this special issue begin to fill these gaps, advancing both the theoretical conceptualization and empirical scope of what is known about the adult lifespan development of prosociality, with implications for significant real-world impact.

We introduce this special issue with a short summary of existing theories of prosociality in aging and adult development and position each theory within Penner et al.'s (2005) multilevel perspective. The contribution of each article is described within this framework. We conclude with a discussion of frontiers and challenges in this field of research to spur innovative hypotheses and research paradigms, as well as to identify promising future research directions.

Existing Theories of Prosociality in Adulthood and Aging

We consider six theoretical models that have contributed to the understanding of prosociality across adulthood and aging. These are presented chronologically.

Erikson's Eight Stages of Psychosocial Development identifies generativity (vs. stagnation) as forming part of the seventh stage of development, occurring in midlife. This model defines generativity as "primarily the concern in establishing and guiding the next generation" (Erikson, 1963, p. 276), encompassing, but not limited to, parenthood, caring for dependents, educating and mentoring younger generations, producing services and goods, and contributing to the common good, including for members of future generations. Erikson's biopsychosocial approach arguably touches on all three levels of the multilevel perspective in focusing on a micro-level prosocial tendency (i.e., generativity), which is manifested in specific interactions at the meso level (e.g., parenting, mentoring), and expressed in contributions to the common good within social roles available at the macro level (cf. Hofer et al., 2014).

The Contributory Model of Successful Aging (Midlarsky & Kahana, 1994) proposes that helping in older age is motivated by age-related increases in empathic concern for others, religious obligation, and concern for moral norms (a sense of duty). It suggests that there are age-graded influences such that older adults derive benefit from helping others because it buffers against the loss of social roles that previously provided meaning in life, status, and social integration. This model also argues for intrinsic motivation in older age to contribute to younger generations and society and suggests that helping in older age is altruistic and motivated by the expected benefit for another despite costs to the self. In considering the impact of social roles on dispositional factors that give rise to altruistic acts, the

Contributory Model can also be viewed as incorporating both micro and macro levels; by contrast, the Contributory Model implies relative stability of prosociality in the face of situational variation. This theoretical approach challenged some existing views of aging and prosociality at the time (see Kahana et al., 1987, for a review) suggesting low levels of helping in older age as a result of physical decline and reduced influence of social obligations, as well as perspectives focused on reciprocity motives within economic models. In a naturalistic study in which adults from a wide age range were approached in a mall for charity donations, Midlarsky and Hannah (1989) found a linear increase with age in likelihood of donating small amounts of cash or time. Thus, the Contributory Model represented a shift from a relatively negative perception of late-life prosociality to one highlighting altruistic motivations.

Van Lange et al.'s (1997) model proposes that individual differences in Social Value Orientation (SVO) can be defined by the relative value assigned to the outcomes of self vs. others (see also Pletzer et al., 2018): (a) *prosocials* (aim to maximize joint outcomes), (b) *individualists* (aim to maximize own regardless of others' outcomes), and (c) *competitors* (aim to maximize the relative difference between own and others' outcomes). Individualists and competitors are often subsumed under the term *proselfs*. Van Lange et al. surveyed a nationally representative Dutch sample ranging from 15 to 89 years of age. Participants completed a game requiring a choice among options for differential allocation of points between the participant and a hypothetical partner, which was used to classify people according to the three orientations. Older age was associated with a higher proportion of prosocials, while the proportion of proselfs decreased with age, providing support for a *prosocial growth hypothesis*. They argued that individual differences in social value orientation are shaped by interactive situations and experiences across adulthood, but SVO shows relative stability and is largely studied as proximal cause that contributes strongly to the initial impulse for prosocial behavior (e.g., Yamagishi et al., 2017).

Socioemotional Selectivity Theory (SST; Carstensen et al., 1999) and the Dual-Process Model (DPM; Brandtstädter & Greve, 1994; Brandtstädter & Rothermund, 2002) share the assumption that temporal perspective is fundamental to the selection and pursuit of prosocial goals (at the micro level). SST suggests that perceiving time as open-ended (as typical at younger ages) motivates acquisition of *knowledge-based goals* that support future needs, while an increasingly limited time horizon with age leads to prioritization of *present-focused socioemotional goals*. According to the DPM of developmental regulation, resilience with aging relies on two adaptive processes: (a) *assimilative activities*, in which behavior is organized and initiated according to existing goal structures; and (b) *accommodative processes*, in which goals are adjusted in line with a change in the availability of "action paths" (Brandtstädter et al., 2010, p. 152). The consequent narrowing of the remaining lifetime with aging stimulates an accommodative process of disengagement from individualistic future-oriented goals (power, achievement, and competence) and an orientation toward ego-transcending strivings (i.e., more enduring sources of meaning), such as authenticity, altruism, and spirituality (Brandtstädter et al., 2010; Lang & Carstensen, 2002). Evidence for this class of theories comes from age-comparative studies, and naturalistic experiments and manipulations of perceived temporal horizons, suggesting that as the time ahead is diminished, the preference for familiar over novel partners increases (Carstensen, 2006), as does the salience of goals related to ego-transcendence over

achievement (e.g., Brandtstädter et al., 2010). In terms of the multi-level framework, this theoretical orientation suggests that prosocial behavior is jointly determined by intraindividual motivational processes related to perceived time (micro level) and the recipient of help (meso level), but is relatively robust across cultural context.

Finally, Mayr and Freund (2020) have recently proposed a Value-Based Decisions framework for understanding lifespan differences in prosociality. According to this view, the choice between prosocial vs. egoistic options involves a cost-benefit analysis in which proximal and distal costs and rewards combine to create a common “valuation currency.” In this framework, distal factors include resources, constraints, and motivations at the micro level (e.g., financial resources, SST, generativity) and at the macro level (e.g., cultural norms). Proximal factors (which can be influenced by distal factors) comprise the immediate costs and benefits of prosocial action at the micro level (e.g., altruism) and meso level (e.g., reciprocity, signalling). Mayr and Freund suggest that distal factors are particularly important when analyzing age-related differences in prosociality because they are more stable and constrain how proximal factors are expressed. Perhaps a reflection of this more stable capacity for valuation based on distal factors is Hubbard et al.’s (2016) construct of General Benevolence, modeled as a second-order factor of three measurement domains: self-report of prosocial disposition, actual giving choice, and the inverse of a “neural utility” signal reflecting reward-related neural activation to self-gain. In an adult lifespan sample ranging in age from 18 to 67, they showed a linear increase in General Benevolence with age.

Taken together, current adult lifespan theories of prosociality cut across Penner et al.’s (2005) micro, meso, and macro levels of analysis. In the following, we leverage the organizational principle of this framework to discuss the contributions of articles in the

special issue. Figure 1 summarizes this effort (see Table S1 for more detail). Note that, as with the theories, articles in the special issue can sometimes be situated across levels.

Micro Level

The micro level of Penner et al.’s (2005) multilevel perspective is concerned with intraindividual processes. It focuses on the origins of prosocial tendencies, including neural and biological mechanisms, and the causes of individual differences in these tendencies. At this level, there has been considerable interest in a “prosocial personality,” which includes trust, agreeableness, and empathy, together with the self-perception of competence and helpfulness (Penner et al., 2005). At the micro level, developmental psychology addresses the interaction between biology and socialization in prosocial disposition, as well as individual differences in the development of prosocial traits. These traits are assumed to prompt prosocial action at the meso and macro levels of analysis, as well as to be shaped by macro-level factors.

Trust, the willingness to be vulnerable with another under the assumption that the other person has good intentions, is considered to be particularly critical for macro-level prosocial decisions (Penner et al., 2005). People are more cooperative if they trust that the other has intentions to cooperate (De Cremer & Stouten, 2003). Studies typically find age-related increases in trust (Bailey & Leon, 2019), as well as reduced differentiation of trustworthiness, which micro level analyses have linked to amygdala (Zebrowitz et al., 2018) and insula (Castle et al., 2012) dysfunction. Exogenous intranasal administration of oxytocin, a neuropeptide and crucial neuromodulator of prosocial behavior, has been shown to decrease the ability

Figure 1
Overview of Special Issue Contributions and Existing Theories of Prosociality in Adulthood and Aging According to the Multilevel Perspective

Prosociality Levels	Theories in Adult Development and Aging	Papers in this Special Issue
Micro Intraindividual/ Dispositional	<ul style="list-style-type: none"> • Erikson’s Eight Stages • Contributory Model of Successful Aging • Social Value Orientation • Socioemotional Selectivity Theory • Dual-Process Model • Value-Based Decisions Approach 	<ul style="list-style-type: none"> • Frazier et al. • Shane et al. • Sparrow et al. • Wieck et al.
Meso Interpersonal/ Situational	<ul style="list-style-type: none"> • Erikson’s Eight Stages • Socioemotional Selectivity Theory • Value-Based Decisions Approach 	<ul style="list-style-type: none"> • Best & Freund • Chi et al. • Nikitin & Freund • Raposo et al. • Sparrow et al.
Macro Group or Organizational context	<ul style="list-style-type: none"> • Erikson’s Eight Stages • Contributory Model of Successful Aging • Value-Based Decisions Approach 	<ul style="list-style-type: none"> • Bjälkebring et al. • Chi et al. • Romano et al.

Note. Theories are listed chronologically. Papers are classified according to the primary focus within this introduction to the Special Issue. See the online article for the color version of this figure.

for correct classification of statements as truth vs. lie (Pfundmair et al., 2017). Oxytocin has also been shown to promote trust in response to untrustworthiness possibly through attenuation of aversive reactions to negative social stimuli (Kirsch et al., 2005). Frazier et al. (2021) examined oxytocin's role in modulating superior temporal gyrus activity in response to breach of trust. Older adults in the oxytocin group showed less, while older adults in the placebo group showed greater, left superior temporal gyrus activity after compared to before breach-of-trust feedback. These findings may provide further indication of age-related reduced responsiveness to cues of untrustworthiness. Alternatively, the data may reflect increased prosocial behavior and emotion-regulatory efforts to counter untrustworthiness by withholding punishment (i.e., reducing investment after breach of trust). The observed modulatory effect of oxytocin on left superior temporal gyrus activity furthermore suggests a role of oxytocin in the micro-level neural processes underlying trust-related meso- and macro-level decision making in older adults.

Shane et al. (2021) propose that, while sharing the goal of contributing to the well-being of others, generativity and prosociality are distinct constructs. They argue that because generativity involves contributions through one's own legacy, it is more "self-focused," relative to prosociality, which is more "other-focused." They used the MIDUS longitudinal dataset to show distinct trajectories for prosociality and generativity, with prosociality peaking a decade earlier than generativity. They also showed that individual differences in the trajectories of both generativity and prosociality were related to control variables and to agreeableness, but prosociality was more strongly related to these individual differences. The study suggests a complex dynamic between motivational and developmental processes that shape individual differences in different facets of prosociality across the lifespan.

Empathy is a further component of the "prosocial personality." It refers to other-oriented emotion, and includes an affective (emotional congruence and sympathy) and cognitive (empathic accuracy) component (Decety & Jackson, 2004). There is substantial evidence for decline in the capacity for cognitive empathy (also referred to as "theory of mind") with age (for a meta-analysis, see Henry et al., 2013). However, data suggest age-related preservation, if not enhancement, of affective empathy, which tends to be positively associated with prosociality in older age (Bailey et al., 2020; Beadle et al., 2015; Sze et al., 2012). Wieck et al. (2021) examined the extent to which perceived emotional job demands moderated the effects of age on empathy at work. Work can be considered a macro-level social institution that shapes meso-level situational influences (e.g., expectations for achievement and appropriate behavior). Age was negatively associated with empathic accuracy, and positively related with sympathy but was not associated with emotional congruence. Unexpectedly, older employees in emotionally demanding jobs experienced lower emotional congruence than young employees. This finding can be interpreted in the context of a possible double-edged nature of sharing other's feelings and the need to keep a healthy distance in emotionally demanding jobs as one's career advances.

At the micro level it is evident that prosocial tendencies are influenced by age, but this effect is moderated by meso- or macro-level situational factors (e.g., the context, such as the work place, in which adult development unfolds). Although cohort effects cannot be entirely ruled out, neurobiological changes also appear to underlie age-related differences in prosocial tendency. Furthermore,

specific prosocial tendencies may contribute differentially to meso-level prosocial actions, depending on age.

Meso Level

Research at the meso level in Penner et al.'s (2005) model analyzes interpersonal processes and the relationship between helper and recipient. This level has been the long-standing focus of research on prosociality in psychology. It takes into account situation-specific contextual features, including recipient of help and form of assistance, as well as the personal consequences of helping.

Sparrow et al. (2021) conducted a meta-analysis of 16 studies comparing altruism in young and older adults. They included studies in which altruism was measured as actual and self-reported behavior (e.g., self-reports of thoughts, beliefs, and actions, and voluntary, nonreciprocal behaviors, such as donations and helping). Older adults were more altruistic than young adults, with the overall size of this effect medium to large. However, the age effect was stronger for studies with young-old samples than for those with older-old samples. They argue that declining resources in the Fourth Age may mitigate against the expression of altruistic motives.

In an intervention study, Raposo et al. (2021) found that older adults increased their walking more than young adults when earning money for a charity, but not necessarily when earning for a loved one. This study shows that incentives that are aligned with prosocial goals can be used to promote healthy behaviors in older age. Importantly, their effectiveness may depend on the recipient of help. While broadly consistent with SST (Carstensen, 2006) and the DPM (Brandtstädter & Greve, 1994; Brandtstädter & Rothermund, 2002), the surprising finding here was that in pitting intimate others against the common good as targets of reciprocity, older adults appeared to be particularly motivated by service to the common good but not to intimate others.

Another intervention study with adults aged 19–88 years manipulated prosocial-focus (i.e., on the well-being of others) vs. self-focus (i.e., on one's own well-being) during everyday social interactions to determine the effects on individual subjective well-being using experience sampling. Nikitin and Freund (2021) found that following an instruction to focus on the well-being of others relative to a baseline day with no instruction had no effect on subjective well-being. An instruction to focus on one's own well-being (i.e., self-focus) relative to a baseline day resulted in reduced subjective well-being, but only for young adults when relationship closeness with interaction partners was high. Averaged across relationship closeness, young adults experienced higher well-being on the other-focus than the self-focus day, while the reverse was found for older adults. These findings suggest that a prosocial focus does not always have a beneficial consequences in older age.

In a further experience sampling study, Chi et al. (2021) found that age was negatively correlated with the frequency of providing emotional support in day-to-day life. However, when older adults did provide emotional support, they experienced attenuated negative affect relative to young and middle-aged adults. In combination with the findings from Wieck et al. (2021), it appears that older adults may be selective when providing emotional support. They may prioritize cases where they are motivated to regulate their emotion or where they believe they have capacity to regulate, such as in the context of interacting with familiar partners. Enhancing emotional experiences with close others is consistent with SST and motivation

to selectively invest resources in emotionally meaningful goals (Carstensen et al., 1999). Our collection of articles highlight unresolved issues with respect to how lifespan trajectories of prosociality vary as a function of the focus of the contribution (e.g., close others vs. an increased sense of General Benevolence).

To assess form of assistance as a potential influence on prosocial behavior, Best and Freund (2021) conducted three studies measuring the effect of age on various types of nonmonetary donations. In one study assessing reactions to hypothetical scenarios, older adults indicated greater willingness to donate physical energy, but not social support or years of life. In two subsequent studies, age did not influence completion of a simple but monotonous task to earn money for a charity. Findings from this study highlight the need for a better understanding of how available resources and intrinsic motivation differentially contribute to valuation in the context of prosocial choices.

In sum, meso-level analyses demonstrate the influence of situation-specific contextual features along with micro-level individual differences on prosociality in older age. Researchers have pointed out the difficulty in separating the unique benefits of prosociality in older age from the benefits derived from physical or social processes inherent in prosocial activities.

Macro Level

The macro level in Penner et al.'s (2005) multilevel perspective takes into account the group or organizational context of particular prosocial actions, including formal volunteering (in which the specific recipient of care is often unknown). Prosocial actions with mutually interdependent outcomes, such as cooperation, are considered at this level, as are contributions to the common good. Like meso-level analyses, the macro level is also concerned with personal consequences of helping.

Using an innovative "lab-in-field" approach, Romano et al. (2021) used interactive games to assess cooperation and generosity with unfamiliar partners in an adult lifespan sample. Whereas generosity involves one person making the decision to help another, cooperation involves both partners making a joint decision to gain mutual benefit. In both games, participants were partnered with individuals from one of three age groups; thus, Romano et al. were able to cross the age of the decision maker with the age of the partner. They found that, averaged across the age of the partner, cooperation and generosity dissociated with age, such that generosity increased with age, but there was no age-related difference in cooperation. However, they also found interesting interactions between the age of the decision maker and the age of the partner. For example, older adults were more cooperative than younger adults with a younger partner. These findings highlight the multifaceted nature of prosociality, and the potential for intergenerational effects to modulate the effect of age on these different forms of prosociality.

Bjälkebring et al. (2021) used longitudinal data to examine the link between volunteering and life satisfaction through the retirement process. They found that although volunteering increased upon entering retirement and in the years following, age at baseline was not associated with this increase. They note that retirement is a life stage, separable from the aging process, that allows for new motivational goals. Interestingly, they found that while increases in life satisfaction at retirement may lead to volunteering, (too much) volunteering may lead to decreases in life satisfaction (see Wieck et al.'s (2021) discussion of possible links between empathy and

burnout in emotionally demanding jobs). This study highlights the complexity of the influence of retirement on prosociality in cutting across the levels in the Penner et al. framework (Fasbender et al., 2018). Retirement is at once a sociocultural institution with norms, values, and support systems (macro level), which can impact the resources, constraints and expectations in the context of everyday life (meso level) and individual differences in dispositional and motivational factors (micro level), which in turn may contribute to prosocial behavior.

Chi et al. (2021) used experience sampling methodology to examine the affective consequences of volunteering at a finer scale, across eight consecutive evenings. On days with more, relative to less, volunteering, negative affect was increased for young adults and stable for middle-aged adults but reduced among older adults. Chi et al. explain these age-related differences in terms of greater role strain among younger adults, again suggesting that sociocultural norms at the macro level can moderate the effects of prosociality at the individual (micro) level.

Taken together, the macro level involving interdependent cooperation or volunteering to help unknown beneficiaries may not always be directly influenced by age, but rather micro level contextual factors such as life stage transitions and macro-level social norms. Similarly to the meso level, as prosociality at the macro level increases, the consequences for well-being in older age may vary. The contrast between the findings of Chi et al. and those of Bjälkebring et al. is provocative, suggesting research is needed on how positive outcomes from volunteering may depend on measurement approach (e.g., ongoing vs. retrospective reports) and roles available (and unavoidable) at different life stages.

Future Directions

This overview hints at emerging debates and areas of study that deserve further attention. In this section we use the research in this Special Issue as a springboard to suggest future directions (see Table 1 for a summary), with particular attention to the value of an integrated approach that encompasses interactions between micro, meso, and macro levels of analysis of prosociality in adulthood and aging.

Lifespan Analysis

Most studies in the special issue included middle-aged adults (cf. Table S1), a typically understudied group of individuals in research on adulthood and aging, thus, putting the special issue at the frontiers of research about developmental perspectives on prosociality. To capture the entire adult lifespan, moving forward, more fine-grained investigation is warranted with extended scope such as by including young-old and older-old age cohorts, as spearheaded by Sparrow et al.'s (2021) meta-analysis on altruism. In fact, this research has particular potential given that some of the earlier models of prosociality and aging, that were superseded by Midlarsky and Kahana's (1994) Contributory Model, may still apply to the Fourth Age, as well as to older adults with poor health. Furthermore, a thorough characterization of transitional change that occurs from middle to older age on prosocial thought and action is warranted to move forward understanding of processes subserving prosociality in not only micro-level biological changes and life-stage transitions (e.g., retirement, grandparenthood) but also as a function of macro-level cultural and social norms. These investigations would benefit

Table 1

Overview of Future Directions for Prosociality in Aging and Adulthood Research That Highlights the Benefits of an Integrated Analysis Across Micro, Meso, and Macro Levels

Future directions	Exemplar future multilevel research aims
Lifespan analysis (also see Bjälkebring et al.; Chi et al.; Shane et al.; Wieck et al.)	<ul style="list-style-type: none"> • Characterize prosociality in micro-level biological aging, including the transition from healthy to pathological aging and the Fourth Age, and also across micro-level life-stage transitions. • Long-term profiling and surveilling to determine effectiveness of micro-, meso-, and macro-level interventions to prevent/reduce exploitation.
Gender differences (also see Chi et al.; Raposo et al.; Shane et al.; Wieck et al.)	<ul style="list-style-type: none"> • Assess gender differences to disentangle micro-level biological from macro-level social processes in the association between different forms of assistance and well-being in older age. • Identify mechanisms underlying gender differences in meso- vs. macro-level prosociality across the lifespan.
Exploitation and real-world application (also see Frazier et al.; Nikitin & Freund; Raposo et al.; Wieck et al.)	<ul style="list-style-type: none"> • Uncover the true extent and underlying multilevel mechanisms of exploitation among older adults. • Measure meso- and macro-level prosociality in complex, dynamic real-world contexts, taking into account under-studied micro-level implicit cognitive processes.
Group biases and the common good (also see Romano et al.)	<ul style="list-style-type: none"> • Explain the influence of macro-level group membership (e.g., political, cultural) on contributions to the common good in aging. • Examine macro-level cooperation as a function of meso-level contextual features, including with older adults as recipients, rather than givers, of help.

from broader integration of micro, meso, and macro levels of analysis, as contextual features and intrapersonal processes could be determined in their relative contributions across ages and times.

Another relevant research gap pertains to variation in prosocial development across generations (Drewelies et al., 2019; Gerstorff et al., 2020). For example, Millennials are expected to be the first generation with worse economic prospects than their parents (Cannon & Kendig, 2018). Long-term surveilling of Millennials to determine how resources influence changes in prosociality over time could be informative given that financial tools that promote prosocial behavior are likely to be less available to older adults in the future. This research could specifically contribute to the debate regarding the degree to which available resources (meso level) interact with intrinsic motivation (micro level) to influence prosociality in older age. Large-scale longitudinal data could also help better delineate precursors to exploitation at each level of analysis, as well as the meso- and macro-level outcomes of exploitation, in everyday life. Furthermore, multilevel strategies put in place to reduce exploitation could be examined with longitudinal data to capture their real-world implications and long-term effectiveness. Extension of this research to pathological aging constitutes a promising future angle in this context, given increasing numbers of older adults with dementia (Langa, 2015) as well as growing evidence that exploitation risk is further amplified in mild cognitive impairment and Alzheimer's disease (Boyle et al., 2019; Lichtenberg et al., 2016).

Gender Differences

A number of studies within the special issue explored gender differences in prosociality. For example, Shane et al. (2021) found that prosociality was positively associated with being female, while generativity was not influenced by gender. However, the current literature has not systematically addressed the question of gender differences in prosociality, including across the adult lifespan. This is surprising given differing micro-level biological and macro-level sociocultural differences between older men and women that are likely to influence prosociality. For example, older men typically have greater access to financial resources than older women (Russell et al., 2018). At the same time, however, empathy and

agreeableness are typically greater among older women than older men (O'Brien et al., 2013). Although Wieck et al. (2021) did not find any influence of gender on empathy, they did, however, find that being female was associated with reporting higher emotional job demands. Similarly, Chi et al. (2021) found that women across the age range were more likely than men to provide unpaid assistance and emotional support. Informal helping and caregiving is normative for women, and although further research is needed, the current findings suggest that gender roles and normative expectations remain stable with age (Burr et al., 2018). Future studies should assess whether gender differences moderate associations between prosocial activities and meso-/macro-level consequences on well-being in older age. Another contribution to gender difference in prosociality in adult development and aging comes from exploratory analyses in Raposo et al. (2021) suggesting that greater motivation to earn money for a charity in older relative to young adults was particularly strong among older men. Future research should attempt to replicate this effect while also identify the underlying motive for this gender difference, as well as its applicability to different contexts (e.g., nonmonetary), and their variations across context (e.g., work environments, family/cultural contexts, etc.), for an integrated multilevel research perspective.

Exploitation and Real-World Application

Studies this special issue represent some of the few attempts to examine the negative consequences of prosociality, including the risk for burnout and exploitation (e.g., Bjälkebring et al., 2021; Frazier et al., 2021; Lin et al., 2019; Wieck et al., 2021; Windsor et al., 2008). Moving forward in this field of research it will be beneficial to take a closer look at this "dark side" of increased/too much prosociality in aging. This line of future work should include a thorough investigation of individuals who have experienced exploitation in their everyday life (Ebner et al., 2021; Spreng et al., 2017; see Ebner et al., in press; Spreng et al., in press, for recent summaries). Older adults are often reluctant to report exploitation due to feelings of shame or embarrassment. Adopting a multilevel integrative approach, research needs to address ways to facilitate older adults to cope and overcome these feelings so that we may learn about

the true extent of exploitation and the true mechanisms underlying the problem. The role of age-related changes in micro-level tendencies, together with macro-level sociocultural factors (e.g., fake news, phishing, challenges in securing privacy) may create the perfect storm. An overarching goal should be to understand how these levels interact to counteract the devastating financial and ultimately health consequences of exploitation and fraud victimization among older individuals. This much-needed future research endeavor has also strong potential for direct relevance for and impact on micro-, meso-, and macro-level processes, and their integration, pertaining to prosociality and aging; and that not only with regards to delineating the specific neurobiological, cognitive, and socio-affective profiles underlying exploitation risk but also by outlining the broader individual and societal life impacts of fraud and exploitation, with possible longer-term impact for policy change.

Although findings in controlled lab settings have been critical for theory development and initial understanding of age-related continuity and change in prosociality, extension to naturally occurring, real-world contexts is now needed. Studies in the current special issue contribute to this research frontier by assessing age-related differences in the work context (Wieck et al., 2021) and by determining the effectiveness of interventions in everyday life (Nikitin & Freund, 2021; Raposo et al., 2021). However, more work is warranted that examines specific mechanisms of prosociality as they apply in the “wild,” in real life; allowing for a naturalistic integration of micro-, meso-, and macro-level processes involved in dynamic and complex everyday life settings. In this context, acknowledgement of the complex and dynamic nature of intuitive decision making could be particularly fruitful to advance understanding of micro-level implicit cognitive processes in prosociality as well as their meso (dyadic) and macro (societal) impacts/consequences. Specifically, the Naturalistic Decision Making framework (Klein, 2008) considers quality of decisions made in fast-paced complex and often dangerous situations by expert decision makers (e.g., fire fighters, military leaders) in real-world situations. This theoretical approach appears particularly promising as older adults tend to have greater life experience than young adults; and thus more naturalistic, intuitive as opposed to more rational, decision-making processes may be at work, and most efficient, with advanced age.

Group Biases and the Common Good

The macro level of analysis includes not only formal volunteering, but also cooperation and group-level prosocial action more generally. Previous studies with young adults have shown that enhancing feelings of group membership and a “common group identity” can increase contributions to the common good and helping towards outgroup members (Gaertner & Dovidio, 2000). Romano et al. (2021) did not find that the ingroup, defined as one’s own age group, influenced effects of age on prosociality. However, the focus in their study was on prosocial action directed towards an individual within each age group, rather than the group per se. Future research should determine whether age group or other types of group membership (e.g., political, historical, cultural) influence contributions to the common good as a function of age. There should be a broader consideration of the interdependent consequences for both the helper and the recipient (i.e., group/collective), as well as the effect of age on *responding* to the outcome of cooperation (i.e., reciprocation vs. exploitation), and particularly the detection and deterrence of

exploitation. The impact of micro-level social value orientation on subsequent macro-level cooperation is well established (for a meta-analysis see Balliet et al., 2011). However, there are very few studies assessing age-related changes in social value orientation, and none to our knowledge that directly address the question of whether age influences the association between social value orientation and cooperation. Future research should determine whether social value orientation is a better predictor of prosociality in older age than other dispositional measures such as agreeableness.

Research to date has largely focused on the prosocial thought and actions of older adults. Relatively neglected is the study of prosociality *directed towards older adults*, in line with the dependency model; thus viewing older adults as not only givers of help but also as recipients. In fact, apart from the oldest-old individuals potentially requiring (more than giving) help, an important question in an aging population is the degree to which people are willing to behave prosocially towards older adults, and the degree to which older adults are willing to accept help. Romano et al. (2021) showed that, despite all age groups expecting less cooperation from young adults relative to the older age groups, young adults were more likely to cooperate with middle-aged and older individuals than individuals from their own age group. Prosocial action directed towards older adults has implications in diverse settings from macro-level health care and organizational settings to meso-level interpersonal family relationships. A prominent topical example, when viewing older adults as a macro-level collective rather than a micro-/meso-level individual, is the apparent choice the media portrayed between staying home to protect vulnerable older adults and keeping the economy open during the coronavirus pandemic. Such real-world social dilemmas provide an opportunity to examine the mechanisms driving intergenerational cooperation in future work, and an opportunity to extend current unlevel approaches to a multilevel analysis perspective.

Conclusion

The articles in this special issue together suggest an association between age and prosociality that varies at micro, meso, and macro levels of analysis. Contextual features such as recipient of help and form of assistance, as well as individual differences such as life stage moderate the effect of age on prosocial thought and action, as well as the motivations underlying prosociality in older age. Contextual features and individual differences are equally important to consider when determining the influence of prosociality on well-being, and the utility of prosocial action as an intervention tool, in older age. This overview outlines important novel contributions of this special issue as well as identifies gaps at each level of analysis while highlighting the need for an integrative (cross-level) theoretical and empirical approach towards understanding prosociality in adult development and aging. By considering the multilevel perspective, a clearer picture of the developmental trajectory and multilevel influences on prosociality can be established.

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