

Learning as an Important Privilege: A Life Span Perspective with Implications for Successful Aging

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Abstract

Research has demonstrated the cognitive and mental health benefits of learning new skills and content across the life span, enhancing knowledge as well as cognitive performance. We argue that the importance of this learning – which is not available equally to all – goes beyond the cognitive and mental health benefits. Learning is important for not only the maintenance, but also enhancement of functional independence in a dynamic environment, such as changes induced by the COVID-19 pandemic and technological advances. Learning difficult skills and content is a privilege because the opportunities for learning are neither guaranteed nor universal, and it requires personal and social engagement, time, motivation, and societal support. This paper highlights the importance of considering learning new skills and content as an *important privilege* across the life span and argues that this privilege becomes increasingly exclusionary as individuals age, when social and infrastructural

support for learning decreases. We highlight research on the potential positive and negative impacts of retirement, when accessibility to learning opportunities may vary, and research on learning barriers due to low expectations and limited resources from poverty. We conclude that addressing barriers to lifelong learning would advance theories on life span cognitive development and raise the bar for successful aging. In doing so, our society might imagine and achieve previously unrealized gains in life span cognitive development, through late adulthood.

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Known Benefits of Learning New Skills and Content in Adulthood

The benefits of learning new skills and content exist over the life span. Besides increasing knowledge of the content area (e.g., Bereiter & Scardamalia, 1996; Sternberg & Grigorenko, 2003), learning new information and skills in group settings with instructors can increase and strengthen social connections (e.g., Park et al., 2007; Sidlinger & Booth-Butterfield, 2010), increase cognitive per-

formance (e.g., working memory and cognitive control; Leanos et al., 2020; episodic memory, Park et al., 2014), and enhance self-evaluative beliefs (e.g., self-efficacy, Payne et al., 2012; West et al., 2008). Formal education – which often terminates by young adulthood – continues to be likely the best way of increasing overall intelligence (Ritchie & Tucker-Drob, 2018) and is consistently a strong predictor of later cognitive abilities (Kremen et al., 2019; for an exception, see Courtin et al., 2019). For middle-age and beyond, literature on lifelong learning programs and education (e.g., Institute for Learning in Retirement, Osher Lifelong Learning Institute, Road Scholar, University of the Third Age [U3A]; McWilliams & Barrett, 2018) highlights benefits in later life, such as better physical health, greater well-being, and enhanced cognitive outcomes (e.g., Boulton-Lewis, 2010; Boulton-Lewis et al., 2006; Fernández-Ballesteros et al., 2012).

Despite potential cognitive loss in older adulthood, new learning is one of several lifestyle factors, both contemporary and from earlier in the lifespan, that relates to lower rates of cognitive decline later in life. In general, being mentally, socially, and physically active, broadly defined, is related to reduced rates of cognitive decline (e.g., Hultsch et al., 1999; Scarmeas et al., 2010; Wilson et al., 2007). Cognitive interventions also have been developed with the aim of mitigating cognitive decline over the long term (see Hertzog et al., 2008; Lampit et al., 2014). In particular, cognitive interventions that include learning new skills (e.g., Bugos et al., 2007; Leanos et al., 2020; Park et al., 2014) or volunteering, which may include novel learning (e.g., Carlson et al., 2009), highlight the importance of novel, challenging activities for increasing cognitive abilities in older adults. This work dovetails with other research showing that novelty in experiences – which might represent learning and engagement – relates to more positive mood and a stronger hippocampal-striatal connectivity (Heller et al., 2020). Although there is limited research on novel learning in adulthood per se, prior studies investigating adults' novel experiences and engagement in general provide a window into this notion, as some learning is likely involved with those types of experiences.

We seek to extend prior work on the benefits of learning by contending that learning new skills and content is an *important privilege* across the life span. Learning is *important* for achieving and maintaining functional independence (i.e., performing daily tasks with little or no assistance), such as effectively using new technological devices and successfully navigating in new environments (e.g., Nguyen et al., 2020). Learning new difficult skills

and novel content is a *privilege* because it requires time, motivation, and societal support (e.g., education, mentors, supplies), not afforded to all (e.g., Wu et al., 2017). The term *privilege* here is meant to highlight the *expensive* and *exclusive* nature of learning in terms of resources required, and juxtaposing the term *important* highlights that it is likely to have a profound effect on adaptation in adulthood. We propose that this “important privilege” concept is often overlooked in conceptualizations and recommendations related to maintaining or improving cognitive abilities and functional independence in adulthood. Although prior work on intellectual engagement, lifelong learning, and education demonstrates the cognitive and mental health benefits of learning in adulthood (see Hertzog et al., 2008, for a review), it does not highlight the importance of learning or the considerable resources required to do so when the learner has to adapt to a dynamic environment. Therefore, the novelty of our concept lies in highlighting the importance of learning new skills and content for maintaining functional independence when adapting to a dynamically changing environment, and that such learning requires considerable resources from society and the learner.

The present paper first discusses how learning new skills and content is an important privilege across the life span, especially in adulthood. Then, we briefly review evidence for this claim, including both benefits from addressing learning as an important privilege and barriers to growth and development when learning is not considered important or when resources for learning are not available. We highlight that issues are most obvious when learning difficult novel skills (e.g., speaking/comprehending new languages or using new technological devices) and content (e.g., envisioning how viruses are transmitted and understanding climate science). In general, novel activities can range from incrementally novel (e.g., learning to play a new piano piece after mastering another piece by the same composer) to completely unfamiliar (e.g., learning to play piano without any prior musical training). Completely unfamiliar activities may be more challenging than incrementally novel activities, in part due to the learner's ability to generalize from prior knowledge. We also focus on learning in adulthood rather than in childhood because learning in a “good enough” environment during childhood is often thought of as the minimum. Thus, societal structures are in place to address deficits (e.g., Compulsory Education Laws, No Child Left Behind Act, Child Protective Services). The same regulations are absent for learning in adulthood, when many erroneously expect universal, inevitable, or

irreversible decline. Therefore, the purpose of this paper is to put forward the idea that learning is an important privilege, highlight the implications of this idea for the life span, particularly in successful aging, and call for more research to investigate the impact of learning new skills and content for successful aging in a dynamic environment.

Learning New Skills and Content Is an Important Privilege in Adulthood

Learning Is Important for Adaptation

Functional independence, typically measured via the Instrumental Activities of Daily Living scale, involves being able to manage a fixed set of daily chores, such as buying groceries and managing one's own finances (Dodge et al., 2006; Lawton & Brody, 1969). Maintaining functional independence, and avoiding disability and dependence, is a hallmark of successful aging (e.g., Rowe & Kahn, 1997). Importantly, optimizing and maintaining functional independence requires knowledge of specific content and mastery of specific skills, which can change over time. These changes can be due to societal, environmental, and social changes, such as with the COVID-19 pandemic (Chakraborty & Maity, 2020), technological advances (e.g., Charness & Boot, 2009), and role transitions as in retirement and grandparenthood (e.g., Wahl et al., 2012). Such changes could mandate learning new skills and adapting already acquired skills for optimized and maintained functional independence. It follows that older adults who have optimized their ability to perform daily tasks independently in a dynamic environment likely have found ways to learn and adapt, although more research is needed to investigate this possibility. Older adults also may choose not to learn how to complete new tasks independently, but rather rely on others to perform tasks for them. For example, instead of learning how to use the Internet, older adults may choose to rely on their adult children to access online medical records. Older adults may also be in situations where they do not need to change if their environments are relatively static. For example, older adults may be able to perform daily tasks (e.g., grocery shopping, banking) in the same way as they have over the past several decades. Indeed, only a relatively small proportion of older adults are functionally dependent (e.g., Salt-house, 2012). Perhaps the small proportion of older adults who are functionally dependent living in a dy-

namic environment may experience more challenges in their adaptation to such an environment. Therefore, learning new skills and content is most obviously important, and perhaps even necessary, for older adults who need to and want to adapt to new situations, especially to remain functionally independent.

Although there are individual differences in what skills would be important to learn for optimizing and maintaining functional independence in a *dynamic* future, we propose that continued skill and content learning is important for successful adaptation to societal/environmental and personal changes. In terms of adapting to technological advances, adults may benefit from becoming proficient with using a smartphone (e.g., Charness & Boot, 2009), accessing digital medical records (e.g., Levy et al., 2015), identifying fake news from real news on social media (e.g., Grinberg et al., 2019), and avoiding online scams (e.g., Burnes et al., 2017). Recently, due to COVID-19 physical distancing restrictions, an increasing number of doctor's appointments are held online via telehealth apps (e.g., Schifeling et al., 2020; Wosik et al., 2020), in addition to medical care providers using and sharing digitized medical records with patients (e.g., Malhotra & Lassiter, 2014). In some areas, ride-hailing apps (e.g., Uber/Lyft) may provide expanded travel access to older adults with restricted mobility (e.g., Vivoda et al., 2018). It is important to note that although adapting to new technologies can increase functionality and positive attitudes in older adulthood (e.g., Arcury et al., 2020; Cody et al., 1999; Delello & McWhorter, 2017), it may not always improve well-being or quality of life, perhaps due to the resources required to remain a relatively autonomous user and the desire for personal connection in older adulthood (Bong et al., 2019; Dickinson & Gregor, 2006; Elliot et al., 2014). In terms of personal changes (e.g., diagnoses with new medical conditions, or new or lost social roles, such as new grandparenthood or unemployment) may also necessitate learning in adulthood. For example, when functionally independent older adults relocate, they may suddenly become partially dependent until they learn to adapt to the new surroundings (e.g., Chen & Wilmoth, 2004). The combined fast pace of technological changes (e.g., using online meeting apps, ride-share apps, online banking apps; e.g., Charness & Boot, 2009) and social role or other personal changes (e.g., retirement, moving to a new area to be closer to their adult children) may prompt older adults of all backgrounds to choose between learning new skills to remain independent or to be dependent on others.

Learning new difficult skills and content is a privilege because the opportunities for learning are neither guaranteed nor universal across the life span and require ample resources, such as time, motivation, materials (e.g., books), and social support (e.g., mentors, caregivers). For example, children, adolescents, and young adults in educational institutions typically spend the majority of their time in class and on homework. Their performance can be externally motivated (e.g., deadlines, grades) or internally motivated (e.g., achieving a sense of purpose and enjoyment). In typical circumstances, several factors are present for young learners, including open-mindedness when learning, individualized tailored instruction from instructors and/or caregivers, growth mindset (i.e., belief that effort can improve achievement; Dweck, 2017), a forgiving environment, serious commitment to learning (including time and motivation), and learning multiple difficult skills simultaneously (Wu et al., 2017). Learning difficult material obligates significant investments in time, energy, and resources: learners must figure out what to learn and acquire the appropriate information. Difficult content and skills include subjects that take years to master, such as apprenticeship models of training for advanced professions. As such, the privilege of learning is especially pronounced for more challenging content.

Because cognitive and functional growth is expected in childhood, and decline is expected in aging, children who are not gaining a great deal annually are often provided extra support, but older adults who are not gaining a great deal are considered normative. To be clear, there are gains in older adulthood, such as in crystallized abilities (e.g., vocabulary and world knowledge; Park & Reuter-Lorenz, 2009). However, gains in other cognitive domains in older adulthood – particularly fluid intelligence or cognitive mechanics – are thought to be modest compared to childhood (i.e., less in scope and magnitude; Craik & Bialystok, 2006) and are subject to individual variation/individual differences (e.g., Wilson et al., 2002). The social and infrastructural supports for learning are removed gradually, as societal pressure to prioritize work and productivity over new learning increases for adults (Arnett, 2000; Herzog et al., 1989; Morrow-Howell et al., 2017; Wu et al., 2017). For example, employers may aim to minimize training periods for employees to maximize productivity, which may be problematic for older adult workers who have knowledge about prior systems but require training on newer systems (Brooke & Taylor, 2005).

The idea that learning is a privilege relates to Maslow's hierarchy of needs in that basic physiological and psychological needs may need to be met before students can achieve success in an educational context (e.g., Freitas & Leonard, 2011). We acknowledge that individuals differ in the barriers they face toward learning, but we propose that the barriers faced by many collectively contribute to the idea that learning can be a privilege. We also propose that these barriers need to be addressed because learning new skills is important for functional independence.

Much more research is needed on the impact of learning as an important privilege for those wanting to adapt to a dynamic environment. Indeed, the purpose of this manuscript is to encourage research on this topic. Because an extensive review of all possible learning barriers is beyond the scope of this paper (but see Wu et al., 2017, for an extended discussion), the next sections selectively review research on retirement, low expectations, and low resources to highlight some cases where not addressing novel skill and content learning as an important privilege may contribute to life span trajectories of cognitive and functional decline.

The Impact of Learning and Motivation after Retirement

Retirement marks a period of transition from engaging primarily in work-related activities to increased participation in intellectual, social, and physical leisure activities, in addition to changes in social roles (e.g., Henning et al., 2020). Therefore, research on retirement highlights older adults' levels of engagement (in some cases, new learning) and motivation after retirement: some retirees may engage in intellectually stimulating activities, which may include new learning, while other retirees may focus on familiar, low-stress leisure activities in which they can comfortably and easily engage (e.g., Lee et al., 2018). Past research on the outcomes of retirement has emphasized social, emotional, and well-being outcomes resulting from these changes (e.g., Wang et al., 2011). Moreover, retirement outcomes have been found to be related to the resources at one's disposal, such as finances, motivation, and social networks (e.g., Wang, 2007). The pursuit of leisure activities in retirement seems to relate to positive outcomes such as higher self-esteem, lower depression, and possibly benefits to cognitive outcomes (e.g., Fehr, 2012; Lee et al., 2018; Lei & Liu, 2018).

We argue that the novelty and challenge of the specific leisure activities critically moderates the potential

cognitive benefits (e.g., Leanos et al., 2020; Park et al., 2014; Stine-Morrow, 2007), and variety is likely important as well (e.g., Carlson et al., 2012). For example, some older adults may engage in new learning in their leisure pursuits (e.g., Marzorati, 2016). Other retirees may focus on familiar, low-stress activities in which they can comfortably and easily engage, or have limited engagement in these enriching activities, which has been found to be associated with poorer health outcomes (Lee et al., 2019; Szinovacz, 2003). Furthermore, many older adults, especially those who are already experiencing sensory and cognitive decline and/or who may be expecting a limited future, may prioritize short-term goals and current well-being over long-term goals (e.g., Lang & Carstensen, 2002). Carstensen's Socioemotional Selectivity Theory proposes that older adults may prioritize actions that are emotionally meaningful, such as connecting with close friends, but may not necessarily increase knowledge or learning goals (e.g., Carstensen et al., 2003). Prioritizing short-term goals and current well-being may lead some older adults, especially those who are already disadvantaged, to avoid learning difficult new skills or content, which over time might lead to cognitive and functional decline (e.g., Lin et al., 2004).

Although the results from research on retirement are mixed with sometimes relatively weak effects, especially in relation to cognitive outcomes, several important findings hint at some of the barriers and benefits of lifelong learning. Some studies report the benefits of retirement in general on mental and physical health (e.g., less stress, more exercise, Hallberg et al., 2015; Mein et al., 2003; Midanik et al., 1995; Westerlund et al., 2009), whereas other studies have observed cognitive, mental, and physical health declines after retirement (e.g., Bonsang et al., 2012; Lee et al., 2019; Mosca & Wright, 2018). For example, Lee et al. (2019) found that retirement was associated with worse cognitive performance based on data from the Health and Retirement Study. This effect may be especially pronounced in cases of early retirement (retiring in one's early 60s, Rohwedder & Willis, 2010, but see Celi-doni et al., 2017). These mixed results (e.g., Meng et al., 2017; Roberts et al., 2011; van der Heide et al., 2013; Zulkar et al., 2019) are attributed largely to whether the changes from preretirement factors (e.g., stress, purpose, mental and physical demands, job complexity) to postretirement factors (e.g., lifestyle/activity choices) are largely positive or negative. Prior observational studies have shown that cognitive decline is slower following retirement from careers that are more cognitively demanding than those that are less cognitively demanding (Fisher et

al., 2014). Further, exposure to novelty at work over the long term can protect against declines later in life (e.g., Fujishiro et al., 2019), and this benefit of novelty at work is even evidenced in careers that generally involve low complexity (e.g., swapping among repetitive tasks, few and simple decisions; Oltmanns et al., 2017). In addition, several studies have demonstrated the psychological, neural, and physical benefits of sustained social, emotional, and cognitive engagement and of volunteering after retirement (e.g., Carlson et al., 2009; Hertzog et al., 2008; Van Willigen, 2000), although these experiences may differ in their requirement of new learning.

An interesting new movement has emerged, where younger and middle-aged adults retire early due to financial independence (i.e., financial independence-retire early [FIRE] movement; Rieckens, 2019). After investing and saving enough money well before the standard retirement age, some of these individuals retire early from high-paying, but demanding, careers to engage in less demanding, but more personally meaningful activities (e.g., a lawyer quits a law firm and starts volunteer work). Some individuals may use this opportunity to embark on new careers and engage in new learning challenges, while balancing well-being. However, others may remove themselves temporarily or even permanently from intellectually complex, challenging work environments in favor of more relaxing environments. Such early "mental retirement" (see Rohwedder & Willis, 2010) is highly problematic. This unique group has the time, energy/health, and money to engage in new learning activities, but some may not see the importance of learning for long-term optimization and maintenance of functional independence in a dynamic environment. It is not clear how many involved in the FIRE movement (as well as other retirees) are prioritizing learning new content and skills to continue adapting to environmental changes to optimize and maintain functional independence.

In general, more research is needed to understand how the diversity of retirement circumstances and ensuing lifestyles interact with the notion of learning as an important privilege (e.g., Topa et al. 2018; Wang, 2007; Wong & Earl, 2008). Well-being may increase from retiring early and living off investments and savings. However, retirement experiences are related to how much control people have over whether and when they retire (e.g., if retirement is forced by illness, redundancy, or caring responsibilities; Szinovacz & Davey, 2005) and therefore the resources available when they do retire. What factors might lead some to take advantage of this situation for learning new skills, while leading others to learn very lit-

tle? Starting a retired life earlier provides freedom, but the need to balance short-term happiness and well-being with frustration from learning new content and skills is coupled with this choice. It may be tempting for early retirees to prioritize short-term emotional well-being over learning difficult new skills and content, as older adults may (e.g., Charles & Carstensen, 2010). At the same time, positive affect is an important motivator for learning and achievement (e.g., Turner et al., 1998). In addition, the overall goal of optimizing and maintaining independence would likely enhance long-term well-being. Therefore, prioritizing short-term emotional and social fulfillment after retiring should be balanced with perseverance in learning (e.g., Duckworth & Gross, 2014), as well as a growth mindset (i.e., belief that abilities can change with effort; Dweck, 2017). Adults could build internal motivation for learning so that learning and achievement become intrinsically rewarding, such as via observing themselves or similar peers master various tasks (e.g., Ryan & Deci, 2009). Furthermore, community centers could provide even more opportunities for older people to learn new skills that could be useful to the older community, and then have these older learners teach these skills to other more novice older people (e.g., technology skills, such as Silver Surfers, Cody et al., 1999), fostering a sustainable positive learning cycle. Although learning new difficult skills and content may lead to frustration over the short term, we propose that doing so to optimize and maintain functional independence could lead to a long-term enhancement of well-being and successful aging.

We call for more research on learning new skills after retirement, which could clarify some of the mixed findings in this area. Future research can focus on whether prioritizing short-term goals and current well-being leads to avoiding learning difficult new skills or content, and whether this is the case among adults from diverse demographic groups. Research is also needed to investigate optimal ways of balancing maximizing positive affect with learning activities that may cause frustration in the short term but lead to optimizing and maintaining independence in the long term.

The Impact of Low Expectations

Learning may be perceived as unimportant or unattainable when societal and individuals' expectations are low. Importantly, learning outcomes depend on support provided to learners, and support for learning is provided based on societal and individuals' expectations. Through-

out the life span, learners can be surrounded by people with low expectations, and may have low expectations themselves (e.g., stereotype threat, Steele & Aronson, 1995). Learners may find themselves surrounded by individuals who expect little of them when, for example, they receive low scores on initial academic assessments, and are placed in remedial classes. Instructors may not provide as much time and effort on low-performing students or may challenge them less than higher-performing students (Harris et al., 1986). These low-performing students may develop a casual commitment to learning and believe that they do not have the abilities to learn new skills. Low expectations, or the perception of low expectations, which can be due to implicit attitudes and explicit stereotypes, can lead to dampened performance on subsequent assessments (e.g., Shapiro & Neuberg, 2007; Steele & Aronson, 1995, see similar findings with older adults, e.g., Barber, 2017; Lamont et al., 2015). Middle-aged and older adults may hold negative stereotypes and low expectations about themselves and others as well (e.g., Barber, 2017; Levy, 2009; Popham & Hess, 2015).

In contrast to having and being surrounded by low expectations, having and being surrounded by positive expectations can raise performance and cognitive abilities, in both younger and older learners. With younger students, this effect is known as the "Pygmalion effect." Rosenthal and Jacobson (1968) showed that students who had teachers who had high expectations of them exhibited larger intellectual gains than did students whose teachers had normal expectations. The intellectual gains were in part attributed to enhanced teacher engagement, as these teachers believed that their "smarter" students had high potential to succeed. Similar findings with positive feedback (although not exactly high expectations) have been shown with older adults: positive feedback enhances memory self-efficacy (i.e., beliefs about one's ability), which in turn relates to better memory performance in both younger and older adults (Strickland-Hughes et al., 2016). Moreover, instructors who have a growth mindset and allow for learners to make mistakes may encourage students to work harder to learn more difficult material (e.g., Dweck, 2017). Positive expectations may decline in late life, as negative age stereotypes about cognitive decline are pervasive. Further, presumption of low expectations from others can limit older adults' cognitive performance in the form of stereotype threat, wherein the older person's performance is directly disrupted in response to concern about confirming a negative stereotype about their group, such as the assumption that older persons are senile (Barber, 2017; Lamont et al., 2015).

Interventions and training programs for older adults that improve these self-evaluative beliefs (i.e., beliefs held by the learner) are effective, in terms of gains on the intervention's targeted abilities and outcomes, and trainees who start interventions with relatively more positive beliefs about their abilities may benefit more than their peers with lower beliefs and expectations (West & Strickland-Hughes, 2015). Positive beliefs and messages could benefit many older adults, especially those embarking on encore careers after retirement from another career (Quinn, 2010). Although older adults in encore careers may recognize the importance, or even necessity, of learning to achieve their goals, they may not always have the resources they need to succeed in the new career (e.g., Allen & de Grip, 2012; Brooke & Taylor, 2005).

In summary, low expectations for learning new skills may lead to lower self-evaluative beliefs in the learner across the life span, which could impact their perceived ability to learn new skills. Lower perceived ability and expectations could lead to lower engagement in and resources for learning, as learning may be perceived as not important or achievable (e.g., Parisi, 2010). The link between reduced engagement in cognitively stimulating activities and cognitive decline is well established (e.g., Hertzog et al., 2008), as is the link between cognitive decline and functional decline (e.g., Dodge et al., 2006). We propose that several factors related to expectations can encourage or discourage how and how much older adults engage in different types of activities. These relationships may interact and accumulate over decades to influence life span trajectories of cognitive function and well-being, especially when the environment changes and requires the learner to adapt to avoid functional decline. Therefore, low expectations could lead older adults to be on trajectories where they underperform over time because of setting the bar too low. Some interventions have been developed with older adults to mitigate the impact of low expectations (e.g., Leanos et al., 2020; West et al., 2008), although more research is needed to better understand the needs and barriers of older adults in circumstances that yield low expectations, especially with regard to learning new skills and content.

The Impact of Low Resources

One of the most obvious examples of the privileged nature of learning is when there is a lack of learning resources. Lacking resources is most prominent in poverty. For individuals experiencing financial scarcity, their time

is often prioritized based on maximizing financial resources in the short term, even if it means sacrificing financial resources in the long term (e.g., Rhine et al., 2006; Shah et al., 2012). Under conditions of financial scarcity, it is difficult to focus on long-term goals or delay gratification (Haushofer & Fehr, 2014), especially in relation to learning new content and skills. There are also few opportunities to connect with mentors to provide individualized scaffolding. For example, infants and children in low-income families tend to be exposed to a lower quantity and quality of language and attention from caregivers, leading to lower language proficiency by toddlerhood (Fernald et al., 2013). Children from low-income backgrounds, perhaps due to low expectations from society and the children themselves, also are more likely to have fixed mindsets about their intelligence, which is the belief that abilities are fixed and unchangeable (Destin et al., 2019). Overall, scarcity of resources in poverty can lead to short-term thinking in goal prioritization often at the detriment of achieving long-term goals, which is important especially for learning new difficult skills that require years to master.

Individuals with low income experience not only a scarcity of environmental resources such as money or time, but also a scarcity of cognitive resources such as attention and executive function (e.g., Mani et al., 2013). Having limited financial resources requires the meticulous calculation of expenses within a budget, which induces an attentional focus on the budgetary constraints and consumes executive resources to manage competing demands (e.g., Zhao & Tamm, 2018). Inevitably, poverty presents significant challenges for learning difficult content and skills. Moreover, recent work has demonstrated that scarcity causally impairs a range of cognitive functions including fluid intelligence, executive function, attention, and long-term planning (Mani et al., 2013; Shah et al., 2012, 2015). These cognitive impairments can be explained by a number of factors (Zhao & Tamm, 2018), including a narrowing of attention to the current task at hand (Shah et al., 2012; Zhao & Tamm, 2017), neglect of beneficial information in the periphery that may help alleviate the condition of scarcity (Zhao & Tamm, 2017), increased temporal discounting rates (Lawrance, 1991), higher levels of stress (Haushofer & Fehr, 2014), and increased aversion to risks (Dohmen et al., 2011).

Perhaps many of these findings with children and young adults translate to older adults, although more research is needed in this area. Between 8 and 18% of people over 65 years of age in various demographic groups (race, sex, age) are living in poverty (Li & Dalaker, 2019). Many

more are financially insecure and/or depend on social security for the majority of their income (Social Security Administration, 2016). In addition to the mental load placed on older adults living in poverty, many learning opportunities may be inaccessible due to cost. For example, programs for older adult learning may require hundreds (perhaps thousands) of dollars in registration or membership fees, in addition to paying for the learning materials and travel costs to community learning centers. Programs that do not require payments may not be as comprehensive or engaging as those that do (e.g., only provide one-off lectures, as opposed to immersive year-long learning opportunities). Older adults who participate in senior center activities, which are often free or low cost, typically have better health and interactions with others, as well as life satisfaction, but also have lower income (National Council on Aging, 2015). For middle-aged adults, especially those in lower-income groups, they may already be spending all of their financial, physical, and mental resources on working psychosocially and/or physically demanding jobs and caring for children and parents, leaving little time, energy, and money for learning new difficult skills and content (e.g., Warren et al., 2004). Furthermore, adults living in poverty face intense stigma, such as being regarded as lazy, irresponsible, or a burden on society (e.g., Reutter et al., 2009), which may relate to having low expectations and experiences of stereotype threat (e.g., Spencer & Castano, 2007). In general, differences in income lead to unequal access to goods, services, and resources, which are related to cumulative negative mental and physical aging effects, functional dependence, and lower life expectancy (e.g., Beydoun & Popkin, 2005; Johnson et al., 2011; Lee & Park, 2020; Seeman et al., 2004). This issue raises questions about fairness of federal policies that include a single age for health and retirement benefits when life expectancy varies across the USA and worldwide.

Several successful interventions have been developed to directly and indirectly mitigate the negative impacts of scarcity on cognitive functions in low-income adults, and they may enhance eventual learning outcomes. For example, an intervention that does not directly increase resources per se, but rather lowers stereotype threat among those living in poverty, enhances self-efficacy, executive control, fluid intelligence, and willingness to engage in benefit programs (Hall et al., 2014). Enhancement of community trust decreases short-term “myopic” decisions (Jachimowicz et al., 2017). Direct unconditional cash transfers also have been shown to alleviate poverty (Haushofer & Shapiro, 2016). In October 2019, the city of

Stockton, CA, announced that it would implement a pilot universal basic income project, providing USD 500 per month to 125 residents who earn less than the city’s median annual income. Perhaps these types of programs will lead to enhanced mental and physical health of individuals with low income. In some ways, these initiatives can free up some resources for learning, but they must be coupled with a supportive system to foster long-term benefits, especially in relation to learning new skills and content.

In summary, low resources are a significant barrier for learning new difficult skills and content, as it not only involves a lack of important learning resources, but also necessitates the learner to use existing resources to acquire missing resources, while experiencing stereotype threat. Providing sociomotivational and monetary resources may relieve some barriers to learning, but this relief is incomplete in many cases. Overall, various barriers to learning, imposed by societal norms, instructor expectations, and learner motivations apply to adulthood as they do earlier in the life span. Research with a life span perspective may connect these disparate areas, while addressing unique barriers for specific age groups.

Successful Aging from Embracing Learning as an Important Privilege

Embracing that learning is an important privilege in adulthood raises the standard for what it means to be a successful ager. Historically, the definition of successful aging in older adulthood focused on maintenance to avoid disease and decline (Rowe & Kahn, 1997). More recent characterizations include enhancing existing capabilities, oftentimes to cope with loss (e.g., Cabeza et al., 2019; Depp et al., 2010). This conceptualization of successful aging also leads to interventions focusing on selectively enhancing and supplementing current abilities in older adults, rather than building new competencies (Vaportzis et al., 2019). As such, the proposed ideas advance theories on successful aging by raising the bar for cognitive and functional norms in older adulthood, as well as accounting for the diversity of ways to successfully age – to thrive in one’s environment. Addressing learning as an important privilege in adulthood also has implications for our understanding of how older adults from diverse groups could build cognitive reserve (i.e., remain cognitively able despite neural pathology; Cabeza et al., 2019). Cognitive reserve is often quantified via educational experience earlier in life, when learners are typically provided with enough

time and resources to learn. Identifying and removing learning barriers for diverse adult groups may enhance cognitive reserve to mitigate effects of later pathology. In particular, older adults with lower education levels (completed up to high school only) have been found to have lower rates of successful aging (McLaughlin et al., 2010). More research on these issues is needed to investigate the impact of learning as an important privilege on successful aging across diverse groups.

The ideas presented in this paper build on prior research on coping for successful and healthy aging. For example, Baltes' Selection Optimization Compensation model (SOC; Baltes, 1997) proposes that older adults benefit from focusing and enhancing selected abilities, and using intact abilities and social and environmental supports to compensate for declining abilities. Extending SOC, Heckhausen and Schultz (1993) proposed that coping strategies include primary control (changing the environment to fit personal goals) and secondary control (changing goals to fit the environment), which relate to the processes of assimilation and accommodation theorized by Brandstädter and Greve (1994). In situations when older adults are not able to achieve certain goals, one coping strategy that is used more frequently with age is flexibly adjusting goals (often downwards) and/or disengaging from the original goal, which could lower levels of depression (e.g., Bailly et al., 2012; Brandstädter & Renner, 1990; Heckhausen et al., 2019; Leitner et al., 2014). Disengaging from an increasing number of goals over the long term could lead to cognitive decline and dependence (see Hertzog et al., 2008). In some cases, older adults may disengage from certain goals that seem unattainable due to perceived abilities, expectations, or environmental resources, but actually could attain these goals with enough support. Therefore, if faced with the choice of learning a new skill to optimize and maintain independence or rely on others, older adults could change their abilities, change the environment, change their goals, or deny the need to change. We propose that although it may be possible for an older adult to survive without needing to learn a new skill for several decades, surviving in this manner in a dynamic environment may not be optimal, as learning new skills could lead to greater benefits and a more meaningful life. More research is needed on this topic to better understand the impact of learning new skills and content on functional independence and well-being in older adulthood.

Moving forward, we encourage more research that identifies skills and content that are important for functional independence in a variety of contexts, and to up-

date this knowledge as the environment changes. We also encourage more research that identifies personal and societal barriers for obtaining these important skills and content. Research in these directions would build on the important work already conducted demonstrating the benefits of engagement and lifelong learning. This work would provide a deeper understanding of the mechanisms underlying learning and successful aging (in relation to functional independence in a dynamic environment) to inform intervention programs. Given the recent rise in academic and nonacademic interest in cognitive interventions in adulthood (e.g., Simons et al., 2016), focusing on learning as an important privilege would help steer this interest in a direction that would lead to long-term benefits for functional independence (i.e., directly applicable to real-world experiences), as well as potential cognitive, motivational, and social enhancements.

Building on prior intervention research aiming to mitigate low expectations and low resources, more intervention work needs to be done to tackle age stereotypes, especially from a young age. For example, research has shown that intergenerational contact between younger and older adults promotes positive aging (e.g., Abrams et al., 2006; Hernandez & Gonzalez, 2008). Positive portrayals of older adults in books, media, and TV (e.g., perhaps older adults learning new skills, embarking on encore careers) also benefit both younger and older generations (Ory et al., 2003). A significant, concerted effort from multiple sources is needed to "disrupt aging" (Jenkins, 2017). Our perspective highlights the importance of supportive environments including social expectations and resources pertinent to facilitate successful aging and calls for more empirical research to inform future intervention work.

In general, our ideas highlight a tension between theories that address different needs in aging, especially for older adults experiencing diverse situations based on available resources (e.g., financial, social, motivational). On the one hand, theories, such as Baltes' SOC model (Baltes, 1997) and Carstensen's Socioemotional Selectivity Theory (Carstensen et al., 2003) address older adults' potential need to compensate for declining abilities and achieve more emotional meaningfulness. On the other hand, we highlight the importance of learning new and challenging content and skills to optimize function in daily life. Although it may seem that there is a need to strike a balance between these apparently contrasting developmental needs, these ideas may be compatible in terms of achieving well-being over the long term. This paper focuses on the issues of learning as an important privilege,

especially in aging, because this conceptualization may encourage a more balanced view in our understanding of successful aging.

Conclusions

Learning new skills and content is an important privilege across the life span for optimizing and maintaining functional independence over the long term. This point is especially important after young adulthood, as support structures for learning, such as formal schooling and access to instructors, are gradually removed. This conceptualization of learning as an important privilege extends beyond classic ideas of intellectual engagement, lifelong learning, and education: prior research demonstrates the benefits of learning in adulthood, but not necessarily the importance of learning for functional independence in a dynamic environment and the extensive resources required to do so in adulthood. Fully acknowledging that new learning is an important privilege in adulthood would shift perspectives in scientific inquiry and lead to considerable improvements in societal resources for learning during the adult years. As a result, conceptualizing learning as an important privilege in adulthood may lead to unrealized gains in adult development (Lindenberger & Baltes, 1995).

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Statement of Ethics

No ethical approval was required or obtained for the preparation of this conceptual paper.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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