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Why We Should Not Characterize Aging as a Disease

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Abstract

Many scientists and philosophers characterize aging as a disease. In this article, I argue against doing so. Characterizing aging as a disease would likely exacerbate age-based discrimination, perpetuate beliefs that undermine our health, and embolden medical professionals to treat their patients unjustly. It would risk these harms without promising any benefits that would be substantial enough to make up for them. If we aim to avoid risking harms unnecessarily, we should not characterize aging as a disease.

1. Introduction

Aging is the primary risk factor for many deadly diseases in the economically rich world (Niccoli and Partridge 2012). The biological mechanisms that make us age also make us more susceptible to cancer, atherosclerosis, and Alzheimer's. Partly for this reason, the biomedical scientists studying these mechanisms—"geroscientists" (Kennedy et al. 2014; Sierra 2016)[1]—tend to define aging in terms of age-related changes that harm us: as an accumulation of molecular damage (Kirkwood 2005; Gladyshev 2014), for instance, or as a progressive loss of function (López-Otín et al. 2013, 2023). Many characterize aging itself as a disease (De Grey and Rae 2007; Bulterijs et al. 2015; Gems 2015; see also Gladyshev et al. 2024).

Philosophers, too, tend to think of aging as a disease (Caplan 2005, 2017; De Winter 2015; Saborido and García-Barranquero 2022; Marín Penella 2024). The staunchest among them take this to be a matter of fact. They argue that aging is a disease because it is dysfunctional—it robs us of our ability to survive and reproduce (Caplan 2005, 2017; De Winter 2015). Arguments like these assume a "naturalist" account of diseases (Ereshefsky 2009). They assume diseases must be grounded in some scientific theory or some feature

[1] The boundaries between disciplines related to this area of research are not always clearly defined (see Okholm 2024). I take "geroscience" to designate any and all scientific research aiming to develop interventions into the mechanisms of aging in hopes of increasing the maximum number of years we are able to live in good health.

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of our biology. But naturalism does not capture the normative judgments we make when characterizing diseases (Wakefield 1992; Cooper 2002; Ereshefsky 2009). Calling anything a disease implies it is undesirable. We do not want diseases; they are bad to have. What we need is an alternative to naturalism that allows us to reflect critically on the normative judgments we make when deciding what should count as a disease.

Naturalism's defects should lead us to change how we characterize aging. I call for us to approach aging as C. Kenneth Waters (2019) argues we should approach the concepts of "genes" and "individuals"—pragmatically. We should not try to determine whether aging is, in fact, a disease. We should try to determine whether characterizing it as such would fit our aims. I argue it would not. Characterizing aging as a disease would likely exacerbate age-based discrimination, perpetuate beliefs that undermine our health, and embolden medical professionals to treat their patients unjustly. It would risk these harms without promising any benefits substantial enough to make up for them. If we aim to avoid risking harms unnecessarily, we should not characterize aging as a disease.

2. Against Naturalism

Naturalists think it is a matter of fact whether aging is a disease. They argue that something is a disease if it is in some relevant sense dysfunctional. Here, I criticize the naturalists' arguments. I show their characterizations do not just depend on facts but also on dubious, normative assumptions about what we should care about when characterizing diseases. We need a different approach to decide which normative assumptions should guide how we characterize aging. We need an alternative to naturalism.

Christopher Boorse exemplifies the naturalistic approach I have in mind. He argues that diseases are "internal states" that impair our functional abilities below what is statistically normal for members of a chosen reference group (1977, 567). It is his reference of age groups that decides how he characterizes aging. Though Boorse thinks aging involves "progressive dysfunctions" like "senile decline," he does not take those dysfunctions to be evidence of aging being a disease (1977, 542). He believes the dysfunctions to be statistically normal for people belonging to older age groups. To illustrate this point with an example, it is only when we reach our sixties and seventies that our risk of dementia spikes (see, for example, Public Health Agency Canada 2017; Kramarow 2024). However much aging might impair our cognitive functioning when we are older, the impairments it would cause us would probably be unexceptional compared to those it would tend to cause others in our age group. Hence, for Boorse, aging is not a disease.

Other naturalists disagree. Gunnar De Winter (2015), for instance, argues that Boorse chose the wrong reference group when evaluating whether the effects of aging are statistically normal. He worries that Boorse's choice is too narrow. If we do not commit to a broad reference group, De Winter claims, we risk making "ever smaller distinctions" that would carve out our groups by "diet," "geographical location," and "familial conditions" (2015, 238). This would render them incoherent and uninformative. To avoid slipping down this distinction-making slope, De Winter argues that we should evaluate the dysfunctions that come with age relative to the biological changes all adults tend to experience. Because age-related declines and diseases typically hurt us only after we are much older than the average adult, the dysfunctions aging causes us are not statistically normal. Therefore, in this view, aging is a disease.

Arthur L. Caplan (2005, 2017) drops the criterion of statistical normality altogether. He points out that though "colds," "tooth decay," and "depression" are all "nearly universal in their distribution," we would not think they are normal in any way that would affect their status as diseases (Caplan 2005, 74).[2] It should not matter to us, then, whether the effects of aging impact everyone or just some portion of a reference group. What should matter is whether aging is dysfunctional (2005, 75). Caplan argues it is. Predominant models of its evolution tell us it serves no function (see Medawar 1952; Williams 1957; Kirkwood and Holliday 1979). And if we turn to its most salient effects, we will find them to be positively dysfunctional (Caplan 2005, 75).[3] Aging wrinkles our skin, makes our bones brittle, and leaves us more vulnerable to deadly diseases (Caplan 2017, 234). It "disables us and kills us for no reason but evolutionary indifference" (2017, 239). So, Caplan concludes, there should be "little doubt" of aging being a disease.

But the naturalists have built their naturalism on non-naturalistic foundations (see Ereshefsky 2009). Biology does not tell us which dysfunctions are relevant and which dysfunctions are normal (2009, 222–223). In Boorse's and De Winter's accounts, it was not our biological makeup that marked out the reference groups they judged aging against—they did. Take De Winter's case for broadening our reference group to include all adults. He worries a narrower reference group would be uninformative. But uninformative about what? Whether we find something informative is not something embedded into the fabric of the universe, decided independently of our values and interests. What we find informative is decided in no small part by what we happen to care about—what problems we want solved, what questions we want answered.

Suppose we wanted to characterize diseases only to track health declines experienced by adults following different diets. De Winter's reference group of "adults" would then be too broad. Though it might tell us whether the health declines we observe are abnormal for adults more generally, it would not tell us whether they are abnormal for adult *omnivores* or *vegans,* specifically. It would not help us learn about the kinds of health declines we are concerned with—for example, whether some observed health decline was statistically normal for someone who eats meat. In cases like this, De Winter's reference group would not be particularly "informative." We would want it narrowed down by diet.

But it is the naturalists' fixation on dysfunctionality that betrays questionable assumptions about what we should care about when characterizing diseases. We characterize things as diseases partly to mark them out as undesirable (Cooper 2002; Ereshefsky 2009). If a friend tells us they have been diagnosed with some disease, we know immediately this is not news to celebrate. Whatever the disease, we would be sure they would not want to have it. Taking dysfunctionality to be definitive of diseases could imply that (i) anything limiting our capacity for survival and reproduction must be a disease, and (ii) anything we would call a disease has to limit this capacity. But we would not want to commit to either claim (see Ereshefsky 2009). The former proves too much; the latter, too little.

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[2] Though Caplan (2005) technically argues that universality does not make a condition *natural* rather than *normal,* he seems to use "natural" and "normal" interchangeably throughout his article.

[3] Caplan seems to view aging as *primarily* a process of dysfunction and decline. Elsewhere, I argue against this view. I show that aging brings with it a wide variety of changes, many of which are not dysfunctional. I claim there is no necessary reason for us to characterize aging in terms of its dysfunctions, or for thinking it is primarily a process of decline (Al-Juhany, n.d.).

There is a lot more to life than survival and reproduction. We care about other things. Take human altruism toward nonrelatives, for instance. Some evolutionary biologists think it is dysfunctional (see André and Morin 2011). Altruistic behavior, after all, is self-sacrificial. As far as evolutionary biologists are concerned, it is behavior that lowers our chances for survival and reproduction but improves someone else's (but see West et al. 2007). And yet, we want people to behave altruistically. It is the altruists who rush into burning buildings to rescue strangers; they are the ones who spend their time and energy supporting the unhoused. We do not think of altruism as undesirable. We certainly would not want to think of it as a disease.

There are also conditions we would want to mark as undesirable, even if they are not technically dysfunctional. Anorgasmia—the inability to orgasm—is one. Though we might want to characterize it as a disease, it is not dysfunctional when caused by weakened or lost sensations in the clitoris (Ereshefsky 2009, 224; see also Lloyd 2006). Orgasms evolved because their "contractile pulses" helped to push out sperm (Lloyd 2006, 110). The clitoral capacity to induce orgasm when stimulated is likely a by-product of selection for the "sperm delivery system" that shaped the development of the penis (2006, 110). The clitoral capacity itself does not help us survive or reproduce. But we would still want to mark its loss as undesirable, as something we might want to address through medical intervention. Why bar ourselves from characterizing it as a disease?

Naturalism is built on faulty foundations. It lacks solid grounds for what it designates as normal, and places too much emphasis on survival and reproduction. To characterize aging, we will need an alternative approach—one that could help guide us through the inevitable normative judgments we will have to make.

3. A Pragmatic Alternative to Naturalism

Normative approaches to diseases require constraints. It is not enough for us to find some biological state or process undesirable to characterize it as a disease. That would be too fickle (Ereshefsky 2009, 223–224). Different communities find different things undesirable, and what they find undesirable changes over time. Powerful people in the past did not want slaves escaping slavery and so attributed slaves' desire for freedom to the "disease" of drapetomania (Cartwright 1851). If finding something undesirable is all anyone needs to call something a disease, how could we say drapetomania is not one?

We can solve this problem by turning toward pragmatism: by characterizing diseases in light of our aims. Quill R. Kukla (2022) shows how. They argue we should characterize things as diseases only when doing so helps us to pursue aims we deem "legitimate"—that is, aligned with our "loosely shared ethical and political norms" (2022, 137). It turns out that is enough for us to reject drapetomania's status as a disease. The aims motivating its characterization are illegitimate. We do not find it acceptable to dominate and dehumanize people, no matter their race. We find it abhorrent. By tying diseases to the aims we endorse, we impose clearer standards on what we should and should not characterize as a disease.

Following Kukla's lead, I propose the following norm to constrain how we characterize aging—call it the norm of reasonable risk: *we should not act in ways that could harm others if we do not expect our actions to yield benefits substantial enough to make up for their expected harms*.

I think most people would accept this norm. While we might believe it is acceptable—commendable, even—to drive a friend to work when they lack an alternative means of transport, we believe it is wrong to drive them to work while drunk. However convenient it may be for our friend to be driven, the risk of someone—anyone—being injured or killed would be too high. The risk of harm would outweigh any benefit we could expect the car ride to offer. The norm of reasonable risk captures this judgment.

Upholding this norm means not characterizing aging in ways we expect would cause more harm than benefit. One reason to accept this norm is because it is minimal—indeed, it is hard to see how an ethical analysis of diseases sensitive to consequences gets off the ground without it.[4] But another reason is that many relevant stakeholders seem to accept it already. Geroscientists do so when they try to discern and manage any risk their prospective therapies might produce (see, for example, Rolland et al. 2023; Cohen et al. 2025). Would-be recipients of those therapies seem to accept this norm, too. Though many express their interest in leading longer, healthier lives, they typically do not support the development of geroscientific therapies when they believe those therapies to be too risky (see Partridge et al. 2009, 2010, 2011; but see also Aparicio 2025).[5] In evaluating biomedical practice by weighing up its expected benefits against its expected harms, these stakeholders implicitly uphold the norm of reasonable risk.

Kukla's criterion tells us we are justified in characterizing aging as a disease if doing so would not violate our shared ethical norms. But we will need to interpret the criterion carefully to apply it here. We should not take it to imply that we are to evaluate our aims independently of the means used to pursue them. It is not wrong to want to make a profit, but it is still wrong to profit by stoking people's fear of older age, fueling their demand for dubious "antiaging" supplements that could harm them. We would not want to say it is legitimate to characterize aging as a disease if it is done to fearmonger, even if it seems legitimate to characterize it as such to make a profit.

To avoid this result, we should evaluate our aims by accounting for the means used to pursue them. This would be a Deweyan view of aims. For John Dewey, an aim is mere "fancy"—a "dream," a "castle in the sky"—unless we use it to direct our actions (Dewey 2002, 234). We do this by imaging the "concrete conditions" we would need realized to bring about some desired end. A student who wants to become a physician would not gain much if, by specifying their aim, they are only able to clarify the profession they hope to join. They would gain plenty more if they probed their now-specified aim to outline the things needed to achieve it: the training they would need to undergo, the qualifications they would need to obtain. Under this view, the value of an aim depends partly on the "costs" and "benefits" of the means it highlights and, of course, requires (Anderson 2023).

A Deweyan understanding of aims implies a Deweyan understanding of legitimacy. Whether an aim turns out to be legitimate can shift and change depending on the means used to pursue it. If the means produce consequences that violate our shared ethical and social norms, then this violation should be factored into our overall assessment of the aim's legitimacy. To recast our earlier example in these terms: the aim of "making a profit" would

[4] Ethical pragmatism requires us to attend to the consequences of our actions, updating our moral beliefs in light of them (for example, James 1891; Dewey 2002; Anderson 2020). We will have to follow suit if we are looking to constrain our normative approach by turning toward pragmatism.

[5] Think, for instance, of the risk of overpopulation owing to radical life extension. For arguments addressing this worry, see Davis (2018) and Steele (2021).

no longer be specific enough to evaluate, but the aim of "making a profit by exploiting customers' fears" would be. If it turns out that the means violates our norms—like the norm of reasonable risk—then its illegitimacy will spill over to the aims it lends itself to.

With this interpretation of legitimacy in mind, we are now able to ground our constraint: We should not characterize aging as a disease if, as a means, it results in consequences that would violate our norm of reasonable risk. In what follows, I argue it would: characterizing aging as a disease would likely risk several harms without yielding benefits that would make up for them.

4. Characterizing Aging as a Disease Could Harm Us

4.1. The Risk of Age-Based Discrimination

Characterizing aging as a disease would risk exacerbating age-based discrimination. Consider how it might in the labor market. Too many employers think we get less motivated, less capable, and less "trainable" as we age (Van Borm et al. 2021; see also Dennis and Thomas 2007; Neumark 2019). And they tend to think so despite an abundance of evidence to the contrary (see Applewhite 2019, chapter 6). The result? Employers are less likely to interview, hire, train, or promote older adults than they are younger adults with similar qualifications (see Dennis and Thomas 2007; Neumark 2019). Many will even go so far as to push older workers out of a job or into early retirement (see Roscigno et al. 2009). The widespread prevalence of age-based discrimination leaves older adults systemically vulnerable to unemployment.

It is an open question whether characterizing aging as a disease would actually worsen age-based discrimination in the market. But studies documenting employers' attitudes toward workers who disclose disabilities or illnesses offer no comfort. When asked about barriers to hiring and retaining disabled and chronically ill workers, employers raise concerns about the workers' productivity. They expect these individuals to lack the stamina, cognitive bandwidth, and physical endurance to produce outputs as well as workers without disabilities (Amir et al. 2009; Chan et al. 2010; Burke et al. 2013). Employers' concerns dampen disabled and chronically ill workers' job prospects.

We see this, for instance, in so-called correspondence experiments that send out fake applications to real job openings. These experiments routinely show that "applicants" who attribute some period of unemployment to chronic illnesses like cancer tend to receive fewer callbacks than applicants maintaining consistent employment (for example, Namingit et al. 2021; Sterkens et al. 2024). Employers' worries about productivity would go a long way toward explaining this bias (Sterkens et al. 2024).

Characterizing aging as a disease could cue in signals that similarly bias employers against older adults. Employers do not know everything they need to know about job applicants to predict with absolute certainty how the applicants will perform as employees. They do not know how motivated, skilled, or adaptable job applicants will turn out to be—not even if they receive well-wrought résumés and dazzling character references. Résumés and references can mislead. So, consciously or not, employers draw on whatever information they have to glean something about an applicant's abilities and suitability (see Spence 1973). Among other things, they take disclosures of illnesses as signals of job applicants being more likely to ask for sick leave or require costly support systems to stay

productive (see Sterkens et al. 2024). Characterizing aging as a disease could cue in these same signals, or bolster employers' already prevailing tendency to take age as a signal of diminished abilities (Van Borm et al. 2021; see also Roscigno et al. 2009).

"Disease" signals decline. After all, diseases impair us. And we often expect the impairments they cause to worsen as they progress. Hearing a friend's cancer has progressed implies they are in poorer health. Characterizing aging as a disease would build the same implication more deeply and firmly into older age. Employers could come to expect older workers and applicants to suffer debilitating health declines that undermine their performance. This could cue in the same concerns employers have about disabled and chronically ill workers: the older the worker, the more progressive their "disease" (and therefore decline), the more likely they are to ask for sick leave and require costly support. Alternatively, characterizing aging as a disease could simply intensify employers' tendency to take age as a signal of diminished abilities. By making the notion of decline more salient, the disease label could lead employers to more readily expect the older workers' and applicants' abilities to have waned. No matter the causal pathway here, the upshot is the same: characterizing aging as a disease would further incentivize employers to discriminate against people on the basis of age.

We should not underestimate how damaging this sort of discrimination can be. Unemployment poses a serious threat to our health. It makes us more vulnerable to stress, depression, and suicide (see Forbes and Krueger 2019; Virgolino et al. 2022). And it is no wonder, either. Unemployment can take away our ability to secure the things most essential to our well-being—like food, housing, or healthcare. For those of us who tie our personal goals and social lives to what we do professionally, it can rob us of both purpose and community (see Applewhite 2019, 148–150). Age-based discrimination, then, is dangerous. It should worry us all. But it should worry geroscientists especially. Researchers link social stressors like unemployment to a higher risk of age-related diseases (Hooten et al. 2022; see also Crimmins 2020)—the very conditions geroscientists fight against.

At this point, one might object that characterizing aging as a disease would only reaffirm employers' accurate assessment of older adults. We know—the argument might go—that older adults are more likely to suffer health declines and age-related diseases (see Niccoli and Partridge 2012). They are therefore more likely to suffer declines that impair their ability to work. Employers might have simply learned that age is a more or less reliable signal of older adults' abilities. If this is true, then thinking of aging as a disease would not motivate employers to discriminate against older adults any more than they do already. It would not change how they perceive age.

But this gives employers far too much credit. Again, employers' beliefs about older adults frequently run counter to the existing evidence (for example, Axelrad 2021; see also Applewhite 2019). Though employers may believe older workers do not have the drive to compete in the workplace, for instance, the available experimental evidence tells us competitive attitudes are variable and complex; they do not just decline linearly with age (Mayr et al. 2012; Sproten and Schwieren 2015). And though employers may believe older workers tend to lack the technical skills needed to do their jobs as well as younger workers, the evidence suggests no clear, general relationship between age and job performance (see, for example, Hedge and Borman 2018; Guzzo et al. 2022). On some metrics, older workers even turn out to outperform their younger counterparts (Cappelli and Novelli 2010). If anything, employers tend to underestimate older adults' abilities.

Of course, we should not make sweeping generalizations about older adults based on a few studies. But the discord between employers' beliefs and the available evidence should give us pause. Employers do not track older adults' skills reliably. All too often, they seem to buy into stereotypes that bias their judgments. Characterizing aging as a disease could strengthen the stereotypes' hold, leading employers to underestimate and discriminate against older adults even more than they currently do.

4.2. The Risk of Belief-Led Health Declines

External discrimination is not the only thing we need to worry about. Characterizing aging as a disease would risk introducing a "looping effect" (Hacking 1995, 2007) where we internalize, then realize, the belief that we are bound toward ill-health as we age. Our beliefs about what it means for us to be this or that—young or old, healthy or sick, sane or mad—lead us to react. We form expectations about what we are able to do and how we are supposed to behave, then act accordingly.

Ian Hacking (2007) illustrates this belief-led looping effect with the example of multiple personality disorder. The more psychiatrists diagnosed people with the disorder, the more people started exhibiting its symptoms. Over time, people's symptoms became more extreme: "First a person had two or three personalities," Hacking writes, but within "a decade, the mean number was seventeen" (2007, 296). This is not to say people's experiences were not real. Hacking acknowledges that people truly felt fractured. His point, rather, was that the institutional and cultural messaging about what those feelings meant—what caused them (trauma), and what they were evidence of (a specific disorder)—influenced how people interpreted their experiences and behaved. Traumatized people started realizing the disorder's symptoms far more readily and intensely than ever before.

How we think about aging can shape how we experience it. We could internalize, then realize, whatever messaging we receive about what it means for us to age (see Levy 2009). Consider, for instance, how older adults respond to paternalistic treatment in care facilities. Too often, nurses and caregivers treat older adults like they are children—designing their treatment plans for them without consult, deciding their schedules, and enforcing routines (Van Loon et al. 2021). In controlled settings, older adults who are assisted rather than encouraged by caregivers with tasks tend to be less confident about their ability to complete the tasks on their own later on (for example, Avorn and Langer 1982; Coudin and Alexopoulus 2010). They tend to perform worse, too (see Avorn and Langer 1982). Excessive, overbearing care communicates to older adults the expectation that they cannot rely on themselves to complete simple tasks and meet their own basic needs. It could lead them to internalize this belief, then act as though they actually cannot.[6]

We should take these looping effects seriously. People's endorsement of negative stereotypes about older age predicts a higher likelihood of them suffering health declines (Levy et al. 2006, 2016; Levy, Slade, and Kasl 2002) and dying (Levy et al. 2002; Levy and Myers 2005). Two mechanisms can help explain why (Levy 2022, 18–19). The first is

[6] This is just one strand of evidence. Infantilizing speech (Caporeal 1981; Caporeal et al. 1983)—sometimes called "elder speak"—predicts lower self-esteem among older adults in nursing homes (Salari 2005). This sort of speech also makes it more difficult for older adults to understand and follow instructions, which is then read as evidence of cognitive decline (Kemper and Harden 1999). The "priming" and "stereotype threat" literatures suggest that repeated exposure to stereotypes could produce similar effects (see Levy 2009, 2022; Barber and Mather 2014, respectively).

biological. Researchers tie beliefs in negative stereotypes about older age to heightened measures of biological stress, like cortisol and inflammation levels (Levy et al. 2016). Chronic, persistent stress can trigger mechanisms that collude with those of aging to make us more vulnerable to age-related diseases (see Epel 2020). The second mechanism is behavioral. People who believe they are bound to suffer from age-related health declines are more likely to resign themselves to them—skipping out on medication, exercise regimens, and medical checkups (Levy and Myers 2004; Wurm et al. 2013). People end up experiencing avoidable health declines because they believe they cannot avoid them.

Characterizing aging as a disease—and, therefore, as a process of decline—could lead us to believe we are bound toward ill-health as we age. It could lead us to then act in ways that realize this belief. In a sense, this happens already. Older adults sometimes do not seek care or treatment because they have been led to believe the health declines they are experiencing are just a normal part of aging (Makris et al. 2015; Polacsek et al. 2019). For instance, when interviewed, one older adult reported not having sought treatment for restrictive back pain because their physician dismissed their complaint with: "What do you expect? You're an old man" (Makris et al. 2015, 4). But debilitating back pain is not "normal." It could be a sign of serious injury or malignancy. Characterizing aging as a disease could foster similarly misleading beliefs among older patients, with similar consequences.

One might worry that the relevant causal link between beliefs and health declines runs in the opposite direction—that it is not the negative beliefs about aging that lead to health declines but the health declines that lead to the negative beliefs. If the causal direction went this way, characterizing aging as a disease would not make much of a difference. It would not make us any more vulnerable to health declines.

But causes do not always move in one direction. Researchers linking age-related beliefs and health declines allow for two-way causation. Some argue for it explicitly. Becca R. Levy et al. (2023), for instance, suggest that chronic pain can lead people to view their progression into older age negatively, but then—through whichever causal channel—those beliefs can also lead them to experience more pain in turn. The causal link between the negative beliefs we internalize and the health declines we experience can run in both directions.

Optimists about the prospect of geroscientific interventions might, at this stage, argue my concern has an expiration date: once geroscientific therapies become widespread, we are going to stop associating aging with *inevitable* decline. Even if we characterize aging as a disease, we will one day have the treatments we need to manage it. People suffering from the disease of aging would then know they can stave off most, if not all, age-related declines through geroscientific therapies. They would not think they are bound to experience decline.

But even in this world of geroscientific therapies, patients could still get dejected enough to resign themselves to ill-health. People fail to commit to simple, existing treatments all the time. They might lack the budget, the organizational skills, or the necessary support systems (Taber et al. 2015). Persistent failure to undergo geroscientific therapies could discourage people to the extent that they start to believe they are bound to experience the declines they assume aging must bring. Geroscientific therapies would not help with that. Not characterizing aging as a disease just might.

4.3 The Risk of Unjust Treatment

Beyond the risks of exacerbating age-based discrimination and perpetuating harmful beliefs about older age, characterizing aging as a disease would also risk emboldening medical professionals to treat their patients unjustly. We want medical professionals to take their patients' testimonies seriously. We also want them to ensure that patients are able to give informed consent before undergoing treatment. Thinking of aging as a disease could allow medical professionals to more readily dismiss patients' testimonies and disregard their right to informed consent.

Characterizing anything as a disease gives medical professionals authority over it. As Kukla (2022, 140) argues, we tend to think people should defer to medical professionals when dealing with medicalized conditions. Characterizing schizophrenia as an illness or a disorder, for instance, communicates the expectation that people should turn to psychiatrists and therapists to determine whether they are schizophrenic and, if so, how they should proceed. This would imply we do not think people should approach schizophrenia in ways medical professionals would not condone. Giving medical professionals authority over a medicalized condition means taking away authority from the people diagnosed with it.

It is in distributing authority this way that characterizing aging as a disease risks emboldening medical professionals to treat their patients unjustly. Consider what happened when we medicalized menopause. Characterizing menopause as a disorder or disease of hormonal deficiency gave physicians authority over it (Coney 1994). This emboldened them to mistreat their patients. Many patients reported their physicians dismissing their concerns about the adverse side effects of hormonal replacement therapy. Drowsiness, depression, cramps, headaches—physicians frequently downplayed these complaints, promising they would be offset by further treatment (1994, chapter 10). They did not take their patients' testimonies seriously.

The case of menopause also illustrates yet another kind of mistreatment: a violation of patients' right to informed consent. Informed consent requires patients to experience no undue, external influence when deciding whether to undergo medical procedures. In the case of menopause, some patients report being pressured by medical professionals to undergo treatment and get screened regularly for any side effects—even when they did not want to. Researcher-activist Sandra Coney gives an example of this, quoting one patient's report of being pestered for months to be screened for breast cancer after undergoing hormonal replacement therapy: "If I let [the screening] slip, and that shadow under my left arm becomes cancer, I am not only going to look silly, I am going to look sick. And the straight-laced radiographer will be the first to tell me I only have myself to blame" (in Coney 1994, 24).

This concern—this anxiety about looking foolish and being shamed for it—indicates the patient is experiencing untoward, external pressure to be screened when they were obviously hesitant to do so. It is because menopause was medicalized that medical professionals thought it appropriate to pressure patients (Coney 1994, 23–24).

Menopause is just one of the changes that come with age. But aging influences virtually all aspects of our health, bringing about a range of physical, cognitive, and social changes. Characterizing aging as a disease would give medical professionals too much authority over too many domains in our lives. This could mean stronger, external control over our diets, sex lives, exercise regimens, hobbies, passions, and professions. The probability that mistreatments similar to those observed in the case of menopause would occur grows higher

as we expand the number of domains in which we hand authority over to medical professionals.

One might object that this argument is founded on a misguided worry about medical expertise. We do not defer to the medical experts arbitrarily. We defer to them because we think they have the skills and knowledge needed to handle medical matters—skills and knowledge we nonexperts lack. As patients or yet-to-be patients, we want to keep our dignity intact. Arguably, ensuring we are in good health is an important part of that. To better maintain our health, we should allow medical professionals to occasionally nudge us in the right directions. It is out of respect for patient dignity that we should let medical professionals pressure patients somewhat, at least when it comes to the medical matters about which they know best.

I sympathize with this objection but it both overestimates medical professionals' expertise and underestimates patients'. Medical expertise depends on experience: the facts medical professionals get to learn and the skills they get to practice. But no one gets to experience everything. Medical students certainly do not. While almost all medical schools in the United States require students to train in pediatrics, far fewer require them to train in geriatrics (see Levy 2022, 149).[7] And when surveyed, many physicians turn out to endorse stereotypes that misleadingly equate aging with decline (2022, 148–151). As a result, they mischaracterize serious but treatable ailments, or even dismiss them entirely (2022, 148–151).

Despite the systemic gaps in requisite knowledge, the authority granted to medical professionals emboldens them to override patients' "experience-based expertise" (see Tekin 2020), imposing their own non-experience-based expertise instead. Medical professionals are not privy to patients' embodied experiences. They cannot experience patients' ailments or treatments for them. But because of the authority we give them, they can discount their patients' expertise nonetheless. They can dismiss their patients' debilitating back pains as though pain is just an inevitable part of aging (Makris et al. 2015) or disregard patients' reports of adverse reactions to hormonal therapies (Coney 1994). They can do all this despite lacking the embodied experiences their patients have.

The concern above is about giving too much authority to medical professionals who have gaps in their knowledge. Characterizing aging as a disease would allow medical professionals to *trespass* into domains they know little about (Ballantyne 2019), emboldening them to treat their patients unjustly. We should not be so willing to let medical professionals pressure patients as though they always know what is best for them. They frequently do not.

5. Characterizing Aging as a Disease Would Not Benefit Us

I have argued that characterizing aging as a disease would risk inflicting harm. But to determine whether it would violate the constraint specified above—whether it would violate the norm of reasonable risk—we will need to consider the benefits it could yield. If it is likely to yield substantial benefits, its risks may be justified. Otherwise, they would not be.

[7] One study surveyed medical schools across the United States in 2008 to find that only 41% had structured geriatric training curricula and only 23% required a medical clerkship in geriatrics (Geriatrics Workforce Policy Studies Center 2008). Another surveyed medical school websites to find that only 45% of medical schools seemed to list required training in geriatric medicine (Dawson et al. 2022).

Characterizing aging as a disease would be incredibly beneficial if it helped geroscientists eliminate age-related diseases. I take it for granted that geroscientists and stakeholders would agree. Here, I consider three ways in which it might: facilitating researchers' investigations, allowing them to better finance their work, and protecting consumers from dubious antiaging "therapies" that could harm them. I show that characterizing aging as a disease is not likely to benefit us much on any of these fronts.

5.1. The Question of Investigative Utility

Consider whether characterizing aging as a disease would help researchers understand and discover interventions into the mechanisms of aging. If it would—thereby improving geroscientists' chances of eliminating hypertension, cancer, Alzheimer's, and other age-related diseases—it may be worth the risks outlined above. The expected benefits may outweigh the expected harms after all.

But there is little reason to think characterizing aging as a disease would significantly improve geroscientific research. Geroscientists have made great strides without doing so. While many of them think of aging as a disease, quite a few of them do not (Gladyshev et al. 2024). Some are uncertain; others are adamant that we should not think of aging as a disease (for example, Rattan 2014; Chmielewski 2020). None of these stances seem to affect how geroscientists go about their investigative work. They all conceptualize aging's mechanisms as causes of age-related diseases, and they all cast those mechanisms as targets for therapeutic intervention. Geroscientists have built some of their most important work on these bases, without having to characterize aging itself as a disease.

Take, as an example, their work on cellular senescence (Campisi 2005, 2011, 2013). When stressed, cells enter into a state of cycle arrest: they stop dividing, enlarge, and start to secrete a cocktail of molecules that degrade and inflame our tissues. While senescent cells serve critical functions for most of our lives, we can accumulate too many of them as we age. Their cumulative secretions can overwhelm us. Over time they can inflame our bodies chronically, increasing our risk of cancer and other age-related diseases. Partly for this reason, the accumulation of senescent cells is considered to be one of the primary mechanisms of aging (López-Otín et al. 2013).

Much of the work that has shaped our understanding of cellular senescence did not characterize aging as a disease. Judith Campisi's highly influential contributions in this research area illustrate this point. She did not define aging at all when first arguing that a buildup of senescent cells makes us more susceptible to cancer (Campisi 1997). When fleshing out the details surrounding these cells, she tended to either leave aging undefined (for example, Coppé et al. 2008; Rodier et al. 2009), or gesture toward an aging phenotype marked by progressive decline (Campisi 2003, 2005). Campisi did not need to characterize aging as a disease to help us understand cellular senescence or its connection to the age-related diseases geroscientists hope to eliminate.

Neither did Campisi need to characterize aging as a disease when she turned to investigate therapeutic interventions that manipulated its mechanisms. She did not resort to any disease characterization when she explored whether we could alleviate symptoms of osteoarthritis (Jeon et al. 2017) or reverse peripheral nerve damage (Feuntes-Flores et al. 2023) by administering "senolytic" molecules that eliminated the senescent cells piling up in our bodies (Chaib et al. 2022). Yet, through studies like these, Campisi nevertheless

helped pave the path toward the development of senolytic therapies—arguably, one of the more promising interventions to come out of geroscience (Lelarge et al. 2024). She never characterized aging as a disease. In fact, in at least one coauthored piece, she explicitly maintained it was not one (Campisi et al. 2019).

Campisi's work shows researchers can achieve exciting advancements in geroscience without characterizing aging as a disease. Provided that geroscientists home in on how the mechanisms of aging make us vulnerable to diseases, and cast these mechanisms as targets for therapeutic intervention, they can develop and investigate promising therapies like senolytics. They do not need to think of aging itself as a disease.

Philosophers like Cristian Saborido and Pablo García-Barranquero (2022, 780) are right to point out that geroscientists have come to understand aging as a biological change caused by "concrete cellular mechanisms" that they can study and manipulate. And they are right to argue that geroscientists' understanding of aging helps them pursue the same investigative aims the concept of disease typically does: "to contribute to research," "make scientific inferences," and unravel "[medical] discoveries" (2022, 781). But this only gives us more reason to think geroscientific research will not change or improve much if geroscientists were to characterize aging as a disease. If the concept of aging already serves all the investigative uses that the concept of disease would, then characterizing aging as a disease is not likely to change geroscientific practice substantially.[8] It would not add anything of significance.

5.2. The Question of Research Funds

Some argue that characterizing aging as a disease would help finance efforts toward the development of geroscientific therapies that combat age-related diseases. They claim that scientists' "paymasters" do not understand the urgent need to support biomedical research into aging (De Grey and Rae 2007, 18–19). Scientists could better communicate this urgency by declaring aging a disease (see also Bulterijs et al. 2015; Gems 2015).

But this argument misunderstands funding bodies' reservations about biomedical research into aging. It assumes funding bodies either do not know how vulnerable the mechanisms of aging can make us, or do not understand how valuable it would be to develop therapies that target them. This does not add up. Historically, financial support was not withheld because funding bodies were ignorant about our vulnerabilities to age-related diseases or because they did not believe it would be valuable to develop therapeutic interventions against them. It was withheld for the much simpler reason that the relevant decision-makers were not convinced scientists could develop these interventions. They did not think scientists could pull off the incredible.

[8] To be clear, Saborido and García-Barranquero (2022) argue that a pragmatic approach to diseases would not distinguish between geroscientists' conception of aging and disease. This is because they discern no practical difference between the concepts of aging and disease *within* the context of investigative research. But Saborido and García-Barranquero explicitly bracket assessments of the broader, social impacts our characterizations of aging could have. If the argument in section 3 is right, then characterizing aging as a disease would likely result in social consequences that extend beyond researchers' immediate investigative work. It is consistent with Saborido and García-Barranquero's argument to maintain that characterizing aging as a disease would likely make little difference to researchers' investigation yet still yield social harms that would render the disease characterization of aging practically distinct.

The formation and funding of the National Institute on Aging (NIA) in the United States offers a glimpse into the qualms financers had with aging research. Decision-makers at the National Institutes of Health (NIH) initially opposed branching off a separate organization to study the biology of aging because they were skeptical about scientists' ability to make any breakthroughs in this complex area of research (Lockett 1984). They were especially concerned that scientists might look to understand aging independently of the "social, physical, and nutritional" environments in which we grow up (1984, 77). Cleaving aging from the rest of human development did not seem "rational" (1984, 77).

The legislative fight to establish the NIA sheds further light on opposition to biomedical research on aging. From 1969 to 1974, several versions of the bill to establish the research institute were tabled, then rejected (Binstock 2003, 8). In a 1971 Senate hearing, the assistant secretary to the Department of Health, Education, and Welfare argued against the NIA's establishment, claiming there were not enough "competent research investigators," "research leads," or "promising ideas" (Lockett 1983, 98). The year after that, at a hearing held in the House of Representatives, the president of the Association of Medical Colleges argued against the bill because of an alleged lack of "trained researchers and valid ideas" in aging research (1983, 122). When a version of the bill was finally passed in 1972, the Office of Management and Budget issued a memo urging President Richard Nixon to veto it. Establishing an independent institute for aging research, the memo warned, could give the "false expectation" that aging could be "controlled and managed through biomedical research" (1983, 139).

Geroscience has come a long way since then but similar worries occasionally spring up again. Opponents of certain strands of geroscience do not think the evidence backs researchers' grander claims, such as that they have already reversed aging (for example, Yang et al. 2023), or that they will soon be able to eliminate it (for example, de Magalhães 2014). Researchers criticize such claims as baseless. Biogerontologist Erik Le Bourg describes the suggestion that we are close to reversing aging as being "not so far from the speech of charlatans claiming that they can make you live for many extra years … provided you pay for their miraculous recipes" (2022, 147). Biochemist Charles Brenner is more scathing about claims that researchers will soon be able to eliminate aging entirely: it is "like believing in the tooth fairy" (quoted in Fuchs 2023).

It is not clear how characterizing aging as a disease would temper the skeptics' doubts. If anything, it could make them worse. As Colin Farrelly (2010, 2–3) points out, characterizing aging as a disease might suggest that geroscientists aim to eliminate aging or that they think they are on the cusp of doing so. The former possibility, he argues, risks distracting people from the science, getting them "entangled in emotive debates" about whether we should want to live forever (2010, 2–3). The latter possibility "risks the scientific plausibility of one's claims," hindering "the efforts to generate greater public support of (and trust [in])" geroscience by having it overpromise then underdeliver (2010, 3; see also Le Bourg 2022; Aparicio 2025).

5.3. The Question of Consumer Protection

So much for inspiring financial support. But there might be yet another reason for wanting to characterize aging as a disease. Some argue that doing so would "shift anti-[aging] therapies from the Federal Drug Administration's (FDA) regulation for cosmetic medicine

to the more rigorous regulations for disease treatment and prevention" (Bulterijs et al. 2015, 3). The idea here is that characterizing aging as a disease would enforce more stringent testing requirements for any intervention before it is designated a proper geroscientific therapy. This would ensure that consumers can access genuine therapies and protect themselves from those "marketing bogus treatments" (Gems 2011, 109).

But we should not overestimate how protective regulatory approval would be. As much as regulatory bodies keep dangerous therapies off the market, their stringent and sometimes idiosyncratic requirements keep many safe therapies off the market as well (Reiss 2017). By reducing the odds of classifying dangerous therapies as safe, they end up increasing the odds of classifying safe therapies as dangerous. Some genuine, beneficial therapies would never reach the market. And for those that do, the slog of gaining regulatory approval would keep them from reaching the market as soon as they could have. People could be denied effective geroscientific interventions or lose out on much of their benefits because of the delays.

Whether the total benefits of ensuring regulatory approval outweigh the costs is an open question. But a bias that reduces the odds of misclassifying dangerous drugs as safe while increasing the odds of misclassifying safe drugs as dangerous is especially costly for geroscience. As a biomedical discipline, geroscience aims to extend the number of years we are able to spend in good health (Kennedy et al. 2014; Sierra 2016). It "would take decades and would be very expensive" for us to track whether geroscientific intervention is producing the requisite effects throughout our lives (Rolland et al. 2023, 4; see also de Magalhães 2014; de Magalhães et al. 2017).

In the current financial landscape, we should expect very few therapies to gain enough financing to reach and pass clinical trials. This is a shame. Geroscientific interventions are meant to produce their health-extending effects by staving off the entire suite of age-related diseases. They are meant to alleviate our risk of cancer, cardiovascular disease, and neurodegeneration altogether. We lose a lot more when we mistakenly reject therapies targeting a whole range of such diseases than we do when we mistakenly reject therapies targeting only one.

It is also unclear how well regulatory approval would protect consumers. People seem to clamor for interventions with even a hint of evidence suggesting they could stave off age-related diseases. Ardent demand for geroscientific drugs, when combined with the hurdles imposed by regulatory restrictions, means many consumers would not wait for approval to experiment with those interventions.

Consider, for example, one of the first drugs to gain regulatory approval for clinical testing in humans as a *geroscientific* intervention: metformin (Newman et al. 2016). Despite its safe and approved use as a treatment for type 2 diabetes, the drug is still being tested as an intervention into the mechanisms of aging and against age-related diseases. Some worry it could blunt the beneficial effects of exercise (for example, Brenner 2023)—arguably the most reliable protection against age-related diseases currently available. We do not know whether it would dampen the effects of exercise to such an extent that it would offset any health improvement it was promised to bring.

Still, this has not stopped researchers (see, for example, Sinclair and LaPlante 2019) and influencers (see Finney 2023) from advertising its geroscientific use to the public. Many people—laypeople and researchers alike—seem to take metformin because of its alleged health-preserving effects (Brenner 2023; Finney 2023; Cohen et al. 2025). The demand for geroscientific interventions is so fervent that consumers seek them out even before they gain

regulatory approval. The slowdown of added regulatory restrictions could fuel this demand even further.

6. Conclusion

I have argued that we should not characterize aging as a disease because doing so would violate the norm of reasonable risk. It would likely exacerbate age-based discrimination, perpetuate beliefs that undermine our health, and embolden medical professionals to treat patients unjustly. And, despite posing these risks, it promises no substantial benefits to make up for them. Characterizing aging as a disease would risk egregious harms unnecessarily.

How, then, should we characterize aging? It is beyond the scope of this article to answer this question here. But the analysis above shows that whatever answer we give, it will need to account for the broader social impacts we can expect our characterization to yield. Biomedicine is an authoritative and influential institution in society. The consequences of its conceptual practices are not walled inside its labs; for better or worse, the consequences ripple outwards, shaping how we think about and approach aging. To avoid risking harms, we will need to characterize aging without instilling into it the same connotations the concept of disease would. As for how we might do so—that is a matter for future examination.[9]

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[9] Elsewhere, I explore this prospect in more detail (Al-Juhany, n.d.). I argue that geroscientists must characterize aging more expansively than they do currently if they are to avoid risking harms unnecessarily, and offer suggestions for how they might.

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