

Is Health the Absence of Disease?

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Abstract: While philosophical questions about health and disease have attracted much attention in recent decades, and while opinions are divided on most issues, influential accounts seem to embrace *negativism* about health, according to which health is the absence of disease. Some subscribe to *unrestricted negativism*, which claims that negativism applies not only to the concepts of health and disease as used by healthcare professionals but also to the lay concept that underpins everyday thinking. Whether people conceptualize health in this manner has implications for medical care and public health, and so we set out to examine this claim in two studies. Participants were asked to assess and compare the health states of two people presented in two vignettes. We found that both lay people and medical students conceptualize health as something more than the absence of disease. We argue that our findings highlight a need to rethink unrestricted negativism and indicate a need to rethink the way the debate has traditionally focused on disease.

Keywords: Health, disease, experimental philosophy of medicine

1. Introduction

Concepts of health and disease are central to medicine, and systematic reflection on the nature of these concepts continues to constitute a boundary-defining problem in the philosophy of medicine (e.g., Caplan 1992; Giroux 2016; Reiss and Ankeny 2016). Given the important role that the concepts of health and disease play in different areas, it is perhaps not surprising that philosophical investigations into how they are (perhaps best) understood has attracted sustained attention.

Philosophers of medicine engaged in debates over proposed definitions of disease disagree on many key issues. For instance, they disagree about whether diseases are a

descriptive matter, evaluative matter, or both (for an overview, see Kingma 2019; Murphy 2021). Many proponents of these differing accounts of disease, however, including those influentially defended by Christopher Boorse (e.g., 1977 1997, 2014) and Jerome Wakefield (e.g., 1992; 2014), seem to agree on one issue: *negativism* about health. According to negativism, health is just the absence of disease.¹ Thus, there is no need to deal with health separately: if negativism is true, then an analysis of disease will also tell us everything we need to know about “health”. Negativism can be contrasted with *positivism*, according to which health is not merely defined by the lack of disease but instead is characterized by the presence of a positive state or capability (e.g., Nordenfelt 2017; Venkatapuram 2013; Wren-Lewis and Alexandrova 2021).

We can further distinguish two kinds of negativism in the philosophy of medicine literature: *restricted negativism* and *unrestricted negativism*. Restricted negativists, such as Boorse, think that negativism is (at least) true of the concept of health which is deployed in theoretical medicine (e.g., Boorse 1997; 2014). That is, according to the concept of health which is (at least) deployed in theoretical medicine, health is just the absence of disease. Unrestricted negativists, such as Wakefield, agree with restricted negativists that the concept of health deployed in theoretical medicine is negative, but they also hold that negativism is true of our common sense conception of health as well (e.g., Wakefield 1992; 2007). For unrestricted negativists there is a continuity between the theoretical concept of health and commonsense concept of health, and that concept is a *negative* one.

In this paper, we are only concerned with *unrestricted negativism* as the claim that negativism, while true of the concept of health in theoretical medicine, is also true of our

¹ It is worth noting that in the philosophy of medicine literature there are negativist positions that characterize health in terms of the absence of states of affairs other than disease. For instance, Nordenfelt (1995; 2007) has argued that health is the absence of *illness*, as opposed to the absence of disease (where illness is distinct from disease). Views such as these fall outside the scope of the current paper.

common sense concept of health. One reason to investigate this in more detail is the suspicion that the general public's understanding of health might align more closely with the positive health concept utilized in public health promotion, other medical areas like rehabilitation, and when considering chronic (as opposed to acute) diseases. Public health is already recognized for deploying a positive concept of health (e.g., Schramme 2017), and some theorists argue that effective health promotion and policy requires comprehending health as more than the absence of disease (e.g., Kingma 2012).² Moreover, areas such as rehabilitation medicine also uses a positive concept of health (Nordenfelt 1998). If rehabilitative measures meant to promote functioning once a disease is cured count as *health* care, then health so understood must be more than just the absence of disease. Finally, in the realm of chronic diseases, it is standardly acknowledged that health can coexist with having (possibly only specific) diseases that are being effectively managed (e.g., CDC 2020; Nordenfelt 2017; Venkatapuram 2013).

Of course, philosophers of medicine debating concepts of disease and health are well aware that there appear to be concepts of health outside of theoretical medicine which go well beyond being the absence of disease. For restricted negativists this observation poses no real problem. After all, the concept of health they are concerned with giving an analysis of is the concept deployed in theoretical medicine. What happens outside of theoretical medicine matters little to that project. For unrestricted negativists, however, there appears to be a *prima facie* issue. If our ordinary concept of health is continuous with the one that is deployed in theoretical medicine, then what should be made of all these apparent positive health concepts? One response here is that positive concepts of health are not really health concepts at all, but rather pick out something else, closely related to health, such as “well

² Public health frequently adopts the WHO's definition of health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity,” which is clearly a positive one.

being”. Alternatively, it could be suggested that there are a plurality of health concepts and *at least one* of those concepts is a negative one, continuous with theoretical medicine. We will not take a stand on such matters in this paper, our point here is just to recognize that parties to debates in the philosophy of medicine are aware of the wider literature on health.

In this paper, we empirically explore unrestricted negativism using the methods of experimental philosophy (De Block and Hens 2021; 2023), examining if people respond as though they are negativists about health. Importantly, this approach is not seen as replacing conceptual analysis, but rather as supplementing it (for a discussion, see Griffiths and Stotz 2008). Appeals to both expert and lay judgments regarding disease and health have played a central role in theorizing in the philosophy of medicine (Murphy 2021). Wakefield himself has previously employed empirical methods to examine different aspects of his own account of mental disorder (see, for example, Wakefield et al. 2006). Of course, this does not mean that we should simply uncover people’s ‘raw’ judgments and then proceed to construct our accounts based on those judgments. Such judgments are liable to be noisy, conflicted, and influenced by irrelevant factors. Nevertheless, we can idealize from those judgments and identify those judgments that need to be explained by any prospective account of disease and health, and those which need to be discarded or explained away. People’s disease and health judgments then can provide *defeasible* evidence regarding the content of their health and disease concepts and whether it is likely to align with unrestricted negativism.

We proceed in this paper as follows. In Section 2, we briefly summarize some of the extant literature in this area and highlight how our study differs in terms of method and content. Then, in Section 3, we describe our experimental methods and materials, and offer a detailed presentation of our results. Finally, in Section 4, we discuss our results and their implications for the philosophical debate and beyond.

2. Vignette-based experimental design

Medical sociologists, anthropologists, and psychologists have studied lay conceptions of health, employing for instance surveys and unstructured, in-depth interviews. Early studies conducted in France (Herzlich 1973) and Scotland (Williams 1990) found that lay concepts of health encompass several dimensions that co-exist in one person's account (e.g., health the absence of illness, health as a reserve or capacity, health as equilibrium or balance). In a large and influential population survey, Blaxter (1990) identified nine discrete categories of health, including health as the absence of disease, as something one can have in spite of having disease, a reserve, physical fitness, living a healthy life-style, vitality, good social relationships, being able to do things, and psychosocial well-being. Blaxter (1990, 35 and 234) concludes that health is multidimensional such that "it is quite possible to have 'good' health in one respect, but 'bad' in another", which makes it difficult to measure health status along one linear scale. Along similar lines, reviews by Hughner and Kleine (2004) and Bishop and Yardley (2010) examining studies of lay conceptions of health highlight three to five major themes" in people's conceptualization of health, including health as the absence of illness, as the ability to perform daily activities, and the experience of vitality and balance.

These studies are relevant to our research aim as they show that health as the absence of disease as well as other positive themes appear to be part of the lay concept of health. However, these studies were not designed to show us whether any of these themes are essential to health or show how it is that these different themes trade-off in contexts where they come apart and compete. In addition, perhaps we cannot assume that the contents of (certain) concepts such as health and disease are explicit, such that people have the capacity to clearly articulate them. For instance, sometimes the previous approaches asked

participants to define their concept of health, or posed open-ended questions such as what is it like when you are healthy, or describe a healthy person who you know. This leads to complex accounts in which the talk of health is not consistent, entangled in life histories, and seems to shift depending on context (for discussion, see Blaxter 2010, 54).

Avoiding this assumption, the approach of the current study does not involve asking participants to articulate their concepts, but instead *use* them. We suppose, instead, that people's judgments provide evidence for the content of even tacit concepts, such that studying what people judge across a range of scenarios can provide *defeasible* evidence regarding certain aspects of the content of their concept. For this reason, the current paper employs a *vignette-based methodology*, which is commonly used in the health sciences (e.g., Bachmann et al. 2008) and is seen as an effective tool to uncover the drivers of medical decisions and practice variation in healthcare (Payton and Gould 2023). Vignette-based experimental designs enable exploration of how judgments might be influenced by factors that would otherwise be difficult or even unethical to isolate in complex real-life situations.

In the medical and health psychology literature, vignettes similar to ours are typically used as anchoring vignettes, to improve intergroup comparability on self-rated health surveys (e.g., Grol-Prokopczyk et al 2011). This is necessary because different populations do not use response categories (e.g., excellent health, good health) in the same manner. These studies employ health vignettes primarily to improve self-rated health measures and use scales that range from poor through to excellent health. Since our aim is to explore unrestricted negativism and thereby to clarify the content of the concept of health as such, we are not primarily interested in different grades of health, but the difference between being healthy or not *simpliciter*. Negativism is consistent with there being grades of health and ill-health, but the difference between whether something meets the criteria for the former or latter type

is the presence or absence of disease.³ Given our focus on negativism, instead of using scales like those in the anchoring studies, we use forced choice to explore the strong claim as simply as possible. This is also why we asked participants to compare the health of someone who explicitly has a disease to the health of someone who does not.

3. Study One

The study was preregistered at OSF [Blinded].⁴ Two participant samples were recruited; one sample was recruited online using Prolific and one through advertisement to undergraduate Aarhus University medical students. Our rationale behind choosing these specific samples was to explore potential differences in health concepts between laypeople and medical students. We hypothesized that medical students, who are in the process of being inducted into medical practices, might incline towards a negativist concept of health.

The first participant sample consisted of 175 people recruited online using Prolific. 24 were excluded from the analyses for failing to respond to all the questions or answer all the attention and comprehension checks correctly. Prolific participants were paid \$2 for approximately 10 minutes of their time. The final sample consisted of 151 participants (72 female, 1 trans/non-binary, aged 19-77; $M = 40.36$, $SD = 13.84$).

The second sample consisted of 204 undergraduate medical students from Aarhus University. In the weeks prior to their participation in the study, the students have attended a series of lectures and tutorials that introduced them to the philosophical debate on health and disease. They have read and presented texts by prominent figures in the debates (e.g.,

³ Of course, it is very likely that people's health judgments are sensitive to disease, but that is consistent with most accounts of health.

⁴ https://osf.io/dr6h5/?view_only=eff1e01bdb55420dbf54820037a395ad this link will be replaced after peer-review. The read-only link preserves author anonymity.

Boorse and Wakefield) and were knowledgeable about the naturalism vs. normativism debate, just as the positive vs. negative definitions of health as well as their challenges. 47 were excluded from the analyses for failing to respond to all the questions or answer all the attention and comprehension checks correctly. The final sample consisted of 157 participants (119 female, 1 trans/non-binary, aged 18-44; $M = 20.73$, $SD = 2.13$).⁵

Participants were randomly assigned to see either the Mila health vignette, or the Luca health vignette first. Question and response orders were all randomized. Ethics approval for the study was obtained from the [Blinded] Human Ethics Committee.

First, the two health vignettes were as follows.

Mila

Mila lives an active lifestyle and at her yearly check-up tells her physician that she is feeling great. The physician informs Mila that while all her test results are normal (blood pressure, cholesterol, triglycerides, body mass index, and so on), she has tested positive for celiac disease. People with celiac disease have an immune response to eating gluten which can damage the intestinal lining preventing the absorption of some nutrients, and can cause diarrhea, fatigue, weight loss, and anemia. Mila would never have known that she had celiac disease had the physician not performed the test. That's because Mila never eats gluten and lives in a gluten-free community.

Luca

Luca lives a sedentary lifestyle and at her yearly check-up tells her physician that she is feeling ok. The physician informs Luca both that she is disease free and that all her test results are normal. However, the physician also tells Luca that while her blood pressure, cholesterol, triglycerides, body mass index, and so on, are all within the normal range, they are *all* very close to being classed as abnormal.

The Mila vignette describes someone who has a well-controlled disease, and the Luca vignette describes someone who has no disease but who has close to abnormal vitals. Each vignette

⁵ There was *no* association between demographic variables and health judgments in either the Prolific sample or Aarhus undergraduate medical student sample.

was presented on a separate screen and was followed by three questions in random order. Following the Mila/Luca vignette participants were asked: “In this scenario, Mila/Luca is healthy?” to which participants could respond “Yes” or “No”. “In this scenario, does Mila/Luca have a disease?” to which participants could respond “Yes” or “No”. Following the Mila vignette participants were asked “In this scenario, how often does Mila eat food which contains gluten?” to which participants could respond “Never”, “At least once a day”, “At least once a week” or “At least once a month”. Following the Luca vignette participants were asked: “In this scenario, how many of Luca’s test results are classified as abnormal?” to which participants could respond “None”, “One”, “Two”, “Three”. Participants that failed to correctly respond that Mila has a disease, Luca does not have a disease, Mila never eats food which contains gluten, and none of Luca’s test results are classified as abnormal were excluded from the analyses.

Then, on a separate screen, participants were presented with both vignettes in random order and asked: “Between these two scenarios, who do you think is healthier, Mila or Luca?” to which participants could respond “Mila” or “Luca”. Finally, participants were asked “What is the name of the physician in the scenarios you were asked to read?” to which participants could respond “The physician is not named in the scenarios”, “Katherine”, “Charles”, or “Winston”. Participants that failed to correctly respond that the physician is not named in the scenarios were excluded from the analyses.

3.1. Study One Results

Table 1 below summarizes the descriptive results of Prolific participants’ judgments regarding whether Mila is healthy, Luca is healthy, and whether Mila or Luca is healthier.

Table 1. Descriptive results for Prolific participants' health judgments.

Question	Response	
	Yes	No
In this scenario, Mila is healthy?	82.1%	17.9%
	(124)	(27)
Is this scenario, Luca is healthy?	82.8%	17.2%
	(125)	(26)
Between these two scenarios who is healthier, Mila or Luca?	Mila	Luca
	76.2%	23.8%
	(115)	(36)

The results of a series of one-sample chi-square showed that people overall judge that both Mila, $\chi^2(1, N = 151) = 62.311, p < .001$, and Luca, $\chi^2(1, N = 151) = 64.907, p < .001$, are healthy. When asked comparatively who is healthier, people overall judge that Mila is healthier than Luca, $\chi^2(1, N = 151) = 41.311, p < .001$. Table 2 below summarizes the descriptive results of Aarhus University undergraduate medical student's judgments about whether Mila is healthy, Luca is healthy, and whether Mila or Luca is healthier.

Table 2. Descriptive results for Aarhus University undergraduate medical student's health judgments.

Question	Response	
	Yes	No

In this scenario, Mila is healthy?	91.7% (144)	8.3% (13)
Is this scenario, Luca is healthy?	Yes	No
	65.0% (102)	35.0% (55)
Between these two scenarios who is healthier, Mila or Luca?	Mila	Luca
	83.1% (256)	16.9% (52)

The results of a series of one-sample chi-square show that people overall judge that both Mila, $\chi^2(1, N = 157) = 109.306, p < .001$, and Luca, $\chi^2(1, N = 157) = 14.070, p < .001$, are healthy. When asked comparatively who is healthy, people overall judge that Mila is healthier than Luca, $\chi^2(1, N = 157) = 99.522, p < .001$. The pattern of judgments observed in Aarhus University undergraduate medical student's is consistent with those observed in the Prolific participants.

Finally, we explored whether there were any differences in judgements between Prolific participants and Aarhus University undergraduate medical students. We found no significant difference between Prolific participants and Aarhus University undergraduate medical students for judgments whether Mila is healthy, $\chi^2(1, N = 308) = 6.278, p = .012$.⁶ However, Prolific participants were significantly more likely to judge that Luca is healthy relative to Aarhus University undergraduate medical students, $\chi^2(1, N = 308) = 12.601, p < .001$. Perhaps consequently, Aarhus University undergraduate medical students were significantly more likely to judge that Mila is healthier than Luca, relative to Prolific

⁶ This study was preregistered using an alpha error probability of .005 (Benjamin et al. 2018).

participants, $\chi^2(1, N = 308) = 10.220, p = .001$.

3.2. Intermediate Discussion

If unrestricted negativism about health is correct and health is just the absence of disease, then people should have (1) disagreed with the claim that Mila is healthy. After all, the vignette explicitly states that Mila has a disease. Moreover, (2) people should have agreed with the claim that Luca is healthy, since she clearly does not have a disease. Finally, as a corollary, (3) people should have judged that Luca is healthier than Mila. After all, if health is just the absence of disease, then a person who is unhealthy because she has a disease could *not* be healthier than a person who is healthy because she does not have a disease. Contra unrestricted negativism about health, however, Study One found the opposite pattern. People overwhelmingly (1) agreed with the claim that Mila is healthy, (2) agreed with the claim that Luca is healthy, and (3) judged that Mila is healthier than Luca.

One insightful referee has suggested that Study One's results might, at least, in part be explained in terms of the association between future risk and disease (see, for discussion, Schwartz 2010). There are two ways this association might be relevant to our results. First, most participants judged Mila to be healthier than Luca, with this majority being larger among the medical students. Despite most people judging that both Mila and Luca are healthy, it is possible that participants judge Luca to be less healthy because they think that her future health is more at risk than Mila's. Further, one might also think that medical students, in virtue of their training, might be more sensitive to future health risks. Interestingly, though, even if participants think that Luca's condition is such now that she is at risk of developing future health problems, very few participants judged that Luca has a

disease now.

Second, and most relatedly, despite having celiac disease, Mila has not and will likely never be at risk from her disease. As is stated in the final sentence of the vignette: “Mila would never have known that she had celiac disease had the physician not performed the test. That’s because Mila never eats gluten and lives in a gluten-free community”. Thus, while Mila might nominally have a disease in some sense, it may not count as a disease in the sense that is of concern to unrestricted negativism (or negativism *simpliciter*). Perhaps something like current or future risk is *necessary* to count as a disease at all.

In order to address both these possibilities we ran a second study. There were two major modifications. First, we asked an additional probe question regarding who is more likely to require medical attention in the future. If people judge that Luca is less healthy than Mila because her future health is more at risk, then people should also judge that Luca is more likely to require medical attention in the future than Mila, despite not having a disease. We also updated the description of the Mila vignette so that Mila had experienced the symptoms of her celiac disease and was at risk of experiencing those symptoms in the future. If future risk is *necessary* for disease, and people are unrestricted negativists about health, then people should now be expected to (1) disagree with the claim that Mila is healthy, and (2) judge that Luca is healthier than Mila.

3.3. Study Two

Once again, the study was preregistered at OSF [Blinded]⁷ and two participant samples were recruited. One sample was recruited online using Prolific and one through advertisement to

⁷ https://osf.io/dr6h5/?view_only=eff1e01bdb55420dbf54820037a395ad this link will be replaced after peer-review. The read-only link preserves author anonymity.

undergraduate Aarhus University medical students. The first participant sample consisted of 180 people recruited online using Prolific. 32 were excluded from the analyses for failing to respond to all the questions or answer all the attention and comprehension checks correctly. Prolific participants were paid \$2 for approximately 10 minutes of their time. The final sample consisted of 148 participants (70 female, 4 trans/non-binary, aged 18-73; $M = 33.86$, $SD = 10.56$). The second sample consisted of 223 undergraduate medical students from Aarhus University. 50 were excluded from the analyses for failing to respond to all the questions or answer all the attention and comprehension checks correctly. The final sample consisted of 173 participants (116 female, 3 trans/non-binary, aged 18-29; $M = 20.71$, $SD = 1.25$). The health vignettes and methods were the same as those described previously with the participants recruited online from Prolific.

Participants were randomly assigned to see either the Mila health vignette, or the Luca health vignette first. Question and response orders were all randomized. Ethics approval for the study was obtained from the [Blinded] Human Ethics Committee.⁸

The Luca health vignette was the same as the one used in Study One, however, the Mila vignette was modified to describe her condition as posing a future, albeit manageable, risk to her. The revised Mila vignette now read:

Mila

Mila lives an active lifestyle and at her yearly check-up tells her physician that while she has generally felt good, recently she has been experiencing both diarrhea and feeling fatigued. The physician informs Mila that while all her test results are normal (blood pressure, cholesterol, triglycerides, body mass index, and so on), she has tested positive for celiac disease. People with celiac disease have an immune response to eating gluten which can damage to the intestinal

⁸ Once again, there was *no* association between demographic variables and health judgments in either the Prolific sample or Aarhus undergraduate medical student sample.

lining preventing the absorption of some nutrients, and can cause diarrhoea, fatigue, weight loss, and anaemia. The physician informs Mila that she can successfully manage her condition by avoiding gluten in her diet. Mila tells her physician that this should not be a problem for her. Gluten-free food products are readily available in her community, and they do not cost any more than ordinary gluten-inclusive products. She also prefers the taste of gluten-free products.

Following the Mila/Luca vignette participants were asked the same probe questions as described in Study One. We did, however, ask one additional probe question associated with future disease: “Between these two scenarios, who do you think is more likely to require medical attention before their next yearly check-up, Mila or Luca?” To which participants could respond “Mila” or “Luca”. Once again, participants that failed to correctly respond to comprehension and attention checks were excluded from the analyses.

3.4. Study Two Results

Table 3 below summarizes the descriptive results of Prolific participants’ judgments regarding whether Mila is healthy, Luca is healthy, who is healthier, and who is more likely to require medical attention.

Table 1. Descriptive results for Prolific participants’ health judgments.

Question	Response	
	Yes	No
In this scenario, Mila is healthy?	73.6%	26.4%
	(109)	(39)
	Yes	No

Is this scenario, Luca is healthy?	76.4% (113)	23.6% (35)
Between these two scenarios who is healthier, Mila or Luca?	Mila	Luca
	68.9% (102)	31.1% (46)
Between these two scenarios who do you think is more likely to require medical attention before their next yearly check-up, Mila or Luca?	Mila	Luca
	41.2% (61)	58.8% (87)

The results of a series of one-sample chi-square showed that people overall judge that both Mila, $\chi^2(1, N = 148) = 33.108, p < .001$, and Luca, $\chi^2(1, N = 148) = 41.108, p < .001$, are healthy. When asked comparatively who is healthy, people overall judge that Mila is healthier than Luca, $\chi^2(1, N = 148) = 21.189, p < .001$. Finally, we found no evidence that people think that Luca is more likely to require medical attention before their next yearly check-up, $\chi^2(1, N = 148) = 4.568, p = .033$.⁹

Table 2 below summarizes the descriptive results of Aarhus University undergraduate medical student's judgments about whether Mila is healthy, Luca is healthy, who is healthier, and who is more likely to require medical attention.

Table 4. Descriptive results for Aarhus University undergraduate medical student's health judgments.

Question	Response
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⁹ Once again, this study was preregistered using an alpha error probability of .005 (Benjamin et al. 2018).

In this scenario, Mila is healthy?	Yes	No
	68.2% (118)	31.8% (55)
Is this scenario, Luca is healthy?	Yes	No
	73.4% (127)	26.6% (46)
Between these two scenarios who is healthier, Mila or Luca?	Mila	Luca
	82.7% (143)	17.3% (30)
Between these two scenarios who do you think is more likely to require medical attention before their next yearly check-up, Mila or Luca?	Mila	Luca
	20.8% (36)	79.2% (137)

The results of a series of one-sample chi-square show that Aarhus University undergraduate medical student's overall judge that both Mila, $\chi^2(1, N = 173) = 22.942, p < .001$, and Luca, $\chi^2(1, N = 173) = 37.925, p < .001$, are healthy. When asked comparatively who is healthier, they overall judge that Mila is healthier than Luca, $\chi^2(1, N = 173) = 73.809, p < .001$. Finally, contrary to our Prolific sample, we found that Aarhus University undergraduate medical students judged that Luca is more likely than Mila to require medical attention before their next yearly check-up, $\chi^2(1, N = 173) = 58.965, p < .001$.

Finally, we once again explored whether there were any significant differences in judgements between Prolific participants and Aarhus University undergraduate medical students. We found no significant difference between Prolific participants and Aarhus University undergraduate medical students for judgments whether Mila is healthy, $\chi^2(1, N =$

321) = 1.140, $p = .286$, or Luca is healthy, $\chi^2(1, N = 321) = 0.366, p = .545$. However, Prolific participants were once again significantly more likely to judge that Luca is healthy relative to Aarhus University undergraduate medical students, $\chi^2(1, N = 321) = 8.333, p = .004$. Further, Aarhus University undergraduate medical students were significantly more likely to judge that Luca would be more likely to require medical attention before their next yearly check-up, relative to Prolific participants, who were roughly divided between Luca and Mila $\chi^2(1, N = 321) = 15.753, p < .001$.

4. General Discussion

Across two studies we observed that participants in both groups overwhelmingly (1) agreed that Mila is healthy, (2) agreed that Luca is healthy, and (3) judged that Mila is healthier than Luca. Recall that Mila has a well-controlled disease and Luca, despite not having a disease, has borderline test results. These results then provide *defeasible* evidence against the claim that unrestricted negativism correctly describes people's health judgments. If unrestricted negativism was correct, then one would predict that people would disagree with the claim that Mila is healthy and judge that Luca is healthier than Mila. After all, a person with a disease is straightforwardly unhealthy, and a person with a disease can never be healthier than a person who does not have a disease.

The implications of these findings for the philosophical debates and unrestricted negativism are not difficult to identify. While some might hold that restricted negativism is true in the context of theoretical medicine, we find no evidence that it is true of our ordinary understanding in the context of patient doctor consultation. As noted before, this provides a defeasible empirical mark against unrestricted negativism. To be clear, the claim is not that

people's health judgements are not sensitive to facts about disease, rather whatever health turns out to be for people, it appears to be more than just the presence or absence of disease.

Proponents of unrestricted negativism might argue that the outcomes of Study One might be explained away in terms of the association between future risk and the disease. For instance, people might think that health is the absence of disease but might also possess an expansive concept of disease in which some kind of future risk is at least *necessary*. Recall that the Mila vignette in Study One screened out *all* the risks of celiac disease, and so Mila might correctly count as having no disease (in some sense), and so also correctly count as being healthy. However, the results of Study Two seem to undermine this explanation. If future risk is necessary for disease, then people should have judged that Mila is unhealthy in the updated vignette where the risks of celiac disease are no longer screened out. Most participants though—73.6% of the Prolific sample and 68.2% of medical students—still judged Mila to be healthy and still judged that Mila is healthier than Luca.

Alternatively, the unrestricted negativist might argue that health is the absence of disease, but that people possess an expansive concept of disease such that (at least some) risk factors of disease are *sufficient* for disease. Thus, people are negativists but judge that Luca's borderline test results are not just indicators of future disease risk but mean that she correctly counts as having a disease *now*. This explanation, however, cannot be right either. That is because very few people judge that Luca has a disease *now*: only 30 participants across both groups and studies. Of course, this is not to suggest that future risk is not important to health, but one does not have to be a negativist to think that. Instead, all it requires is thinking that the future risk can influence health judgments independent of disease, which seems entirely plausible and is borne out by our results. Participants consistently judged that Mila is healthier than Luca. Further, at least half of the lay participants and a majority of medical students

judged that Luca would be more likely to require medical attention during the coming year (despite her not having a disease).

The finding that the general public's understanding of health may align more closely with a positive health concept might not come as a surprise to some, given that it is reflected in the WHO's definition of health and explicitly utilized in public health promotion, other medical areas like rehabilitation, and debates on chronic diseases. While our findings pose a challenge to unrestricted negativism, proponents of restricted negativism, like Boorse, might not find this troubling, as they acknowledge that there exist positive concepts of health outside of theoretical medicine (Boorse 1977; 1997).

Regardless, it is plausible that a narrowly defined concept exists, potentially reflecting a key success condition within medicine, and meriting exploration in future studies. But while it makes sense to think that the perspective may hold importance in some medical contexts, we may speculate that the absence of its deployment in the context of our study may reflect the general population's leanings towards a broader, positive concept of health. The broader conceptualization of health might be more salient and relevant for the general population, who likely place value on a more holistic understanding of health.

Finally, perhaps unrestricted (and perhaps restricted) negativists could argue that the concept of health they are concerned with is much tighter than the one we ended up tracking in our current study. Asking whether someone is healthy or not is ambiguous between, say, being *physically* healthy, *mentally* healthy, and so on. Negativism, more precisely articulated, should be understood as the claim that you cannot have a disease and be healthy with respect to the *same* set of facts. It is entirely possible to have a disease and be healthy with respect to different sets of facts. For instance, it is not possible to count as having a physical disease and be physically healthy, but it might be perfectly acceptable to have a physical disease and be

healthy in some other sense (i.e., mentally, socially, spiritually, and so on). Likewise, it is not possible to count as having a mental disorder and be mentally healthy, but again it might be perfectly acceptable to have a mental disorder and be healthy in some other sense (i.e., physically, socially, spiritually, and so on). The vignettes in our current study describe facts about both Mila and Luca's mental state and lifestyle and so relative to some subset of this wider set of facts both might correctly count as being healthy. If we had asked whether Mila is physically healthy, instead of just healthy, then it is possible that we might have observed (more) people responding as negativists.

Our exploratory comparison between lay participants and medical students uncovered interesting differences which would be well worth investigating further in future. Relative to lay participants, medical students were significantly less likely to judge that Luca is healthy (though most still did judge that she was), and, consequently, were more likely to judge that Mila is healthier than Luca. Further, medical students were significantly more likely to judge that Luca would be more likely to require medical attention (before their next yearly check-up) than lay participants. Although it cannot be expected that medical students deploy expert medical concepts, if the concept of health in theoretical medicine is a negative one, then you might have expected that medical students would at least respond in the direction predicted by negativism, given their training. But if anything, we observed them respond in the opposite direction, as indicated by the fact that they are relatively less likely to judge that Luca is healthy. One possible explanation of this, connected to our earlier discussion, is that medical training results in doctors being more sensitive to risk factors such as borderline test results, sedentary lifestyle, and so on, and such factors, as noted earlier can count against health even in the absence of disease. Of course, this is speculative and there is nothing in the current results which indicates the source of this difference. Nevertheless, if the theoretical concept is not a

negative one then the apparent positive concepts of health might not stand apart from what occurs in theoretical medicine and instead might be continuous with it.

Some might argue that the emphasis on lay judgments and concepts holds little relevance for the goals of philosophical inquiry. Rather than developing accounts of what is currently meant by disease and health, we should focus our efforts on "engineering" new disease and health concepts. However, as Murphy (2021) puts it, "everyday language puts constraints on a concept of health that need to be respected, and that if we move too far from ordinary usage we have stopped talking about health and started talking about something else." Similarly, Matthewson and Griffiths (2017, 450) contend that when the current dominant analyses of health and disease exclude certain conditions that are intuitively recognized as diseases, then that counts as a reason to doubt its adequacy. Such is the case when the biostatistical account excludes diseases that have persisted at epidemic levels for long periods, or when the harmful dysfunction account excludes diseases that inadvertently led to an increase in fitness. Of course, this does not mean that such accounts are not perfectly good accounts of *something*, just that they might not be accounts of health and disease (at least in the sense that frames most ordinary thought). Thus, understanding lay concepts can prove useful, depending on the aims of a revisionary view.

4.1. Implications beyond the philosophical debates

Whether negativism is true carries implications beyond the debate on concepts of health and disease in the philosophy of medicine. In the context of clinical medicine, if health professionals deploy a negative conception, then raising awareness that people use a positive conception of health might help avoid unintentionally "talking past" patients. For example,

after a successful invasive treatment of a stroke, a discharging physician may send a patient home with the message that the patient's health has been restored, conveying the impression that medical care has reached its aim. If the patient operates with a positive conception of health and expects that post-operative rehabilitation measures will help restore her health, she might well be puzzled by the message. In general, shared clinical decision making would certainly be facilitated if medical professionals were able to acknowledge and incorporate the patient's conception of health into their treatment plans.

In the context of public health, it is important to have a solid grasp of people's intuitive conception of health when choosing how to measure health. The lack of understanding could lead to incomplete or inaccurate assessments of health, which could ultimately limit the effectiveness of policies aimed at improving health outcomes. Moreover, understanding people's intuitive conception of health is also important for designing effective interventions. For example, depending on what conception of health people operate with, efforts to promote health may prioritize interventions that treat specific pathological conditions or aim to promote behaviors that could improve health in the positive sense. But in any case, if the aim of an intervention is to change behaviors by appealing to potential *health* improvements, then the intervention needs to latch on to people's concepts (or at least manage people's expectations).

The research findings presented in this paper are subject to at least two significant limitations, which means that any conclusions drawn with respect to philosophical questions and practical implications must be approached with caution. First, the study has only considered *one* condition (i.e., celiac disease), and one might worry that people might not be sufficiently familiar with the disease and would perhaps reach different judgments if asked to consider hypertension, diabetes, or some neurodegenerative disease. Connectedly, because

our study was restricted to a *somatic* condition, we cannot say whether results will differ for mental disorders, which might be much more intimately tied up with other factors and positive conditions such as happiness or well-being. Second, it is possible that people might still be negativists about health in some narrower sense. Once it is held fixed relative to what set of facts people are to issue their health judgments relative to, people might respond that physical health is incompatible with physical diseases, and so on. This would certainly be worth investigating in future.

Conclusion

Among the debates in the philosophy of medicine, the debate on concepts of health and disease has traditionally occupied a key position. The majority of the debates have centered around the concept of disease, which is not surprising given the negativist position is endorsed by influential figures like Boorse and Wakefield. In an attempt to contribute to a better understanding of the concept of health, our vignette-based study explored unrestricted negativism. The main finding is that seemingly in contrast to what unrestricted negativism would predict, contemporary lay people as well as medical students appear to be positivist about health. Our findings have implications for debates in philosophy of medicine. At the very least, our results highlight the need to think in much more detail about unrestricted negativism and what this view actually amounts to. We might speculate that, alongside suggesting a need to rethink unrestricted negativism, our findings also signal that it might be beneficial to shift the traditional disease-focused lens of the debate. Quite simply, if negativism is false, then it is worth dealing with health separately, as even the most comprehensive analysis of disease could only ever provide a partial account of health.

In philosophy of medicine, the concepts of health and disease have been extensively discussed for several decades, and some philosophers have argued that a number of key debates in this area have become unproductive (Schwartz 2017; Lemoine 2013). We think that experimental philosophy could be used to positively contribute to those debates and hope that this study will encourage further empirical exploration into our concepts of health and disease as well as other issues in the philosophy of medicine.

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