This issue of the *International Journal of Epidemiology* features three papers that assess the predictive power of self-rated health (SRH) for mortality between various socio-economic groups, respectively within three developed countries (France, The Netherlands and the United States).\(^1\) The studies published in this issue follow in the footsteps of Burstrom and Fredlund\(^4\) and Van Doorslaer and Gerdtham\(^5\) who found that the association of SRH with mortality does not differ by either occupational group or income in Sweden. However, the similarities end there, as all the studies presented here found some evidence for a modifying effect of socio-economic status (SES) on the relationship between SRH and mortality, albeit with gradients in sometimes opposite directions. Mixed findings such as these could be—misleadingly—taken as evidence that SRH is not a reliable measure of health for the study of social inequalities in health; instead, in this editorial, I will show how these differences provide fruitful insights for understanding how individuals assess their own health and thus point the way towards a need for more research designed to test these specific hypotheses.

### Is SRH a good predictor of mortality?

Before examining where these studies intersect and diverge from one another, we must replace their enquiry in its broader context. These studies indeed extend a 25-year-old stream of research that attempts to quantify the predictive validity of a single item question of SRH for ‘true’ health by associating it with subsequent mortality. With few exceptions, this line of research found that SRH had strong predictive power for subsequent mortality.\(^6\) In fact, a recent meta-analysis quantified the relative risk of mortality as 1.92 \([1.64, 2.25]\) for those reporting ‘poor’ rather than ‘excellent’ health status.\(^8\)

The studies in this issue take this line of enquiry further to ask whether this relationship is robust to modifying effects from individuals’ socio-economic status. According to Burstrom and Fredlund,\(^4\) this concern emerged notably in response to research from developing countries showing lower reports of acute morbid conditions than what should be expected given mortality levels.\(^9\)\(^10\) While these studies examined self-reported morbidity and not SRH, and that as such, differential access to health care and diagnosis was a likely explanation, such observations nevertheless warranted a closer look at subgroup differences in the predictive power of SRH for a host of more objective conditions, including mortality. Many studies have examined the modifying effect of gender, but only two to date had examined the modifying effect of SES and this only in Sweden;\(^4\)\(^5\) the three studies in this issue are therefore a welcomed addition to this body of literature. In the next section I will delve deeper into the underlying motivation for such studies.

### The quest for ‘true’ health

Most, if not all the authors engaged in this line of enquiry justify it by invoking the need to understand to what extent SRH captures ‘true’ health. But assumptions about the meaning of this unobserved ‘true’ health function are rarely explicitly unpacked, though the choice of the gold standard is revealing.

Maddox, one of the pioneers of research on self-ratings of health, once wrote that they ‘clearly measure something more—and something less—than objective medical ratings’.\(^11\) Yet, it would appear that much of the work discussed here is rather working under the broad assumption that ‘true’ health is defined as the absence of diseases and especially those that are life-threatening, or ‘mortality relevant’. Moreover, ‘true’ health is equated with objective measures of health, of which mortality is undoubtedly the gold standard.

Thus, while Idler and Benyamini\(^8\) suggested that one of the reasons for the vast amount of research on the association between SRH and mortality was the recognition of the salience of the World Health Organization (WHO) holistic definition of health, most of the studies they review do not purport to operationalize that definition. In fact, the WHO definition of health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity’ would categorize SRH as an indicator of health-related quality of life, as does notably the U.S. Center for Disease Control.\(^12\) However, life-threatening conditions are in this perspective only
one component of SRH. Thus, if individuals attribute greater weight to non-life-threatening domains of health in response to the SRH question, an association with mortality would not necessarily logically follow. Without advocating that we turn to phenomenology or post-modernism, we ought to ask ourselves what information individuals rely on when answering this question.

How do individuals assess their SRH?
Early qualitative studies that have examined what health domains are used when individuals assess their own health have shown that self-ratings of health are derived from a combination of information from specific health problems, general physical functioning and health behaviours. Building on these findings, more recent quantitative research contrasting the importance of these various domains has shown that information that might objectively be deemed highly relevant to mortality, such as physician’s diagnoses or smoking history, tended in fact to be less predictive of both SRH and mortality than more immediate and concrete, somatic experiences of physical functioning.

The most convincing illustration of the salience of this individual experiential process comes from Idler and colleagues, who used the NHANES data to show that SRH predicted mortality only among respondents with a self-reported pre-existing circulatory disease and not among the comparison groups of NHANES-diagnosed or healthy respondents (free of all serious disease, not just circulatory). The strength of this study comes notably from the fact that the NHANES conducted a comprehensive, standardized physician examination at baseline that allowed the authors to distinguish among these groups. Thus, the authors contend that SRH does reflect additional, ‘privileged’ knowledge about illness held by the respondent, ‘which is developed and refined by the firsthand experience of illness and honed in social settings where comparisons can be made (p 351.).’

Making sense of mixed findings
So, how does this previous research illuminate the findings at hand? Contrary to the two previous Swedish studies mentioned above, the three studies published here all show some significant modifying effect of SES on the SRH-mortality relationship. However, while two studies in this issue (Beam Dowd and Zajacova; Huisman et al) suggest SRH is more predictive of mortality among higher SES individuals, one (Singh-Manoux et al.) points towards an inverse gradient. I will show that while the Singh-Manoux et al. findings may apparently be the most puzzling and contradictory, documented selection biases in the sample suggest that they are in fact in line with the research by Idler et al. described earlier. This of course means that the results of the other two studies cannot directly be explained by this previous research, but I will argue that this provides us with new hypotheses to test in our quest for ‘true’ health.

How health selection can replicate a study design
The Singh-Manoux et al. study has an important distinguishing feature from the other studies published in this issue in that it relies on an occupational cohort and not a general population sample. Moreover, the characteristics of this occupational cohort have been well-documented and point to selection biases that suggest that the Singh-Manoux et al. study may in fact have unwittingly replicated Idler et al.’s design.

First, two previous studies have shown that the GAZEL workers exhibit much lower mortality than the rest of the French population. This effect is quite strong, with standardized mortality rates of 54 for males and 58 for females. These characteristics have likely emerged through processes linked to the healthy worker effect, as well as life course effects due to the GAZEL working conditions that approximate those of French civil servants, with good fringe benefits and high employment security. Finally, this effect is likely to be compounded by the fact that participation to the study was done on a voluntary basis and that the higher occupational grades were about three times as likely as the lower grades to participate.

Secondly, in Sing-Manoux et al.’s paper, much of the difference by socio-economic status in the strength of the SRH-mortality relationship is driven by the lowest occupational and income categories (which are presumably overlapping measurements of the same group). As pointed out earlier, the GAZEL workers have very high employment security; consequently, as reported by Goldberg and Luce, a number of positions that fall in the unskilled category are occupied by workers who developed health problems while they were employed by GAZEL. Thus, the high mortality that these categories exhibit cannot be attributed to social causation, but rather to a health selection effect of downward internal mobility in response to a limiting condition occurring within the firm.

From our perspective, the important point here is that these are workers who have a history of a limiting illness leading to downward mobility and who are being compared with a population that is healthier than the average French population. These two conditions approximate Idler and colleagues’ NHANES study design that contrasted the predictive power of SRH among individuals with a history of circulatory disease and among those deemed ‘healthy’, namely free of all self-reported and diagnosed diseases. This would then suggest that Singh-Manoux et al.’s findings of the stronger predictive power of SRH among lower social status groups are consistent with the view that SRH reflects experiential knowledge held by the respondents about their health.

The experiential view of SRH can hardly explain the results of the other two studies in this issue however, as they both suggest that the predictive power of SRH is greater among higher SES individuals. The next section will therefore suggest new directions for research to assess how higher SES individuals’ health assessments differ from those of other groups.
Are higher SES individuals better at assessing their ‘true’ health?

In light of the above, one could minimally argue that Beam Dowd and Zajacova’s, and Huisman and colleagues’ results suggest that higher SES individuals are ‘better’ at taking mortality-relevant information into consideration when making their assessment. In fact, if we take Beam Dowd and Zajacova’s results, which are exhibiting the strongest, most consistent gradient and contrast them with the odds of mortality for poor health from the meta-analysis reported earlier [1.92 (1.64, 2.25)], we see that the relative risk of mortality for those in poor or fair health and with less than a high school degree [1.79 (1.73, 1.86)] and the bottom income quartile [1.80 (1.73, 1.87)] fall squarely within the same confidence interval. In contrast, the relative risk for higher SES groups are, respectively [2.82 (2.67, 2.98)] for the highest educational group and [3.65 (3.33, 3.99)] for the top income quartile. This would suggest that higher SES individuals predictions are indeed better than the average and not that the lower SES individuals produce worse predictions than average.

At this point, we can only speculate as to the reasons for those differences. One possibility could be that higher SES individuals are supplementing experiential information with more objective information to a greater extent than lower SES individuals. Holding the experiential side constant by controlling for morbidity, greater weight on mortality-relevant information would generate a stronger SRH-mortality association. This relationship was found in a study on gender differences in the association between SRH and mortality: poor SRH was shown to be more predictive of mortality among men than women, which was explained by the fact that women’s assessments incorporated more disabling health conditions, while men’s were centered on mortality risks and lifestyle factors.

An alternative (or complementary) explanation may have to do with the predictability of causes of mortality among the different groups. Indeed, one of the reasons why SRH may be less predictive of mortality among lower socio-economic groups, may be that the latter are more susceptible to external causes of death that have a larger random shock component and are thus not as strongly related to current health status. Beam Dowd and Zajacova’s analysis provide us with the first step in evaluating this hypothesis by disaggregating their results by cause of death. While this is not true of education, the effect of poor/fair health by income quartile for external causes exhibits a much flatter gradient than any other cause of death, with all confidence intervals overlapping and point estimates falling within other categories’ confidence intervals. Disaggregating further by cause of death or into avoidable and unavoidable causes (for instance, considering suicide as a separate category from other external causes) may uncover even greater differences.

Finally, in explaining some of these discrepancies, cross-national studies also emerge as one of the fruitful areas of research. Among the factors that might play a role here are the range of social inequalities and the often-times related generosity of the social safety net. Indeed, the strongest differences are found in the US, which has the largest GINI coefficient of all three countries examined in these papers. In such a context, the detrimental effects of belonging to a socio-economically deprived group may be amplified by the paucity of social programmes. If objective knowledge about health were part of the explanation here, we would expect to find stronger differences in contexts where access to health care and diagnoses is strongly dependent upon social status. This could also account for the relationship reported by Huisman et al.: in a system with low inequalities and high access to universal education and health care, differences in knowledge may only emerge at the very extremes of the distribution of advantage.

What’s next for SRH?

As Macintyre et al. argue, SRH measures have a lot going for them: the data are easier to collect than accurate mortality data; they are relevant even at ages when mortality rates are low; and they are one of the best indicator of use of and need for health care resources. As such, SRH is not likely to disappear from observational studies of social inequalities in health in the near future.

We therefore must continue to disentangle what dimensions of health it captures. However, rather than indiscriminately refer to an unobservable ‘true’ health, it would be more explicit if we were looking for the predictive power of SRH for the type of conditions that we can measure with the greatest accuracy and replicability. We must also recognize that those conditions may not be the most relevant for individuals’ health-related quality of life. Moreover, studies contrasting the predictive power of SRH between different subgroups should rely on previous research, including qualitative findings, to inform their hypotheses as to what differences they would expect to find. I have pointed above to some fruitful directions this research might take with regards to socio-economic status groupings, but other promising lines of enquiry exist that should also be pursued, with, for instance, anchoring vignettes.

In sum, our concern with the association between SRH and mortality stems from the fact that we have a limited understanding of what ‘true’ health is and an even poorer grasp of how to measure it. In this context, I would argue that SRH is not the problem in our quest of an understanding of what are these ‘true’ social inequalities in health; rather than a nuisance factor to be explained away, the differences highlighted here should spur us to push our thinking and research further to understand what is ‘true’ health and how it comes to be embodied in response to social conditions.

Acknowledgements

A.Q.V is supported by a Québec Health Research Fund (FRSQ) Health and Society salary award and this research was funded by a Canadian Institutes for Health Research programmatic operating grant (MOP77800).

Conflict of interest: None declared.
References


