Associations between indicators of self-rated health, cognitive function, risk of cognitive impairment, and dementia: A coordinated data analysis

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Abstract

Objectives. A growing body of literature suggests that self- or patient- reported health may be associated with objective health outcomes. Self-reported health could thus be a non-invasive and low-cost way of identifying who is at risk of poor health in later life. However, no prior study has systematically examined this relationship using multiple large datasets. The goal of the current study was thus to examine the extent to which self-rated health was associated with cognitive function, a distinct outcome rather than an aspect of health itself.

Methods. Using a coordinated data analysis (CDA) methodological framework, we identified 15 longitudinal datasets comprising over 140,000 participants representing 38 countries that met our analytic inclusion criteria. Our preregistered analyses tested 1) whether self-rated health was associated with cognitive function both concurrently and at longitudinal follow-up, 2) the odds of developing cognitive impairment or dementia over the course of the study, and 3) whether these associations persisted net of demographic and health covariates.

Results. Across nearly all datasets, higher self-rated health was associated with better cognitive function (both concurrently and longitudinally) and lower odds of developing dementia, over and above the effects of chronic conditions. Age moderated some effects, such that these associations may be strongest among older adults.

Discussion. The implications of these findings are discussed in terms of the predictive utility of single-item subjective health indicators on downstream health outcomes and the benefits of using CDA in aging research.

Keywords: Subjective Health; Cognitive Aging; Multiple Cohort Study Replication

Introduction

Psychosocial research has long sought to identify individual difference factors in early adulthood and midlife that robustly predict health outcomes in later life. Self-reported health beliefs, such as the subjective perception of health, may be helpful in forecasting downstream health outcomes. A growing body of literature suggests that subjective beliefs about one's health may be related to objective health and mortality (DeSalvo et al., 2006; Idler & Benyamini, 1997; Lorem et al., 2020; Stenholm et al., 2014). Less is known about whether subjective health is related to cognitive function, a distinct outcome rather than an aspect of health itself, but emerging evidence suggests that there is an association with the risk of dementia (Stephan et al., 2021). The current study builds on this work and addresses whether self-rated health (SRH) is associated with both concurrent and prospective cognitive function and the risk of cognitive impairment or dementia. We used the coordinated data analysis (CDA) methodological framework to evaluate these questions (Graham et al., 2022; Hofer & Piccinin, 2009), and test whether these associations 1) replicate across several long-term longitudinal panel studies, 2) account for additional variance in cognitive function over and above the inclusion of objective health indicators, and 3) vary as a function of sex and age.

Self-Rated Health

The *acceleration* of aging varies from person to person, and there are extensive individual differences in the rate of aging-related declines. Given that SRH – a subjective measure of overall health status – is strongly associated with objective physical health (Latham & Peek, 2013), it is plausible that SRH could help predict or portend how individuals age. Furthermore, because SRH is often a single-item assessment (e.g., "In general, would you say that your health is excellent, very good, good, fair, or poor?"), it is efficient, accessible, and easily administered.

There is growing evidence that substantiates the accuracy of an individual's perceptions of their own health as an indicator of their future health. In past studies, self-assessments of general health, physical health, and mental health have been found to predict functional decline and mortality (Y. Lee, 2000), and these effects have been distinct from those of objective health measures. Specifically, recent research shows that self-ratings of health are useful indicators of wellness and are uniquely related to various objective and consequential health outcomes such as physical diseases (e.g., stroke; Latham & Peek, 2013), a higher risk of incident dementia (Stephan et al., 2021; Yip et al., 2006), and mortality risk (DeSalvo et al., 2006). Thus, given its predictive validity and ease of administration in research and patient populations, incorporating SRH into measures of health is of paramount importance (Behr et al., 2023) and bears the potential to guide research, policy, and clinical practice.

SRH Predicts Physical Health in Older Adulthood

SRH can be viewed as a holistic evaluation of one's health and represents an individual's subjective intuition of all aspects of their health. Previous work has linked SRH to several health indicators in older adulthood, including functional impairment and mortality (Bond et al., 2006). In a meta-analytic review, 23 of 27 studies found that lower SRH consistently predicted mortality after accounting for other health indicators—an effect stronger for men than women (Idler & Benyamini, 1997). Notably, gender differences in the predictive utility of SRH suggest that SRH accounts for additional variance beyond "objective" indicators of health. For example, there is a discrepancy between global self-ratings of health and medically obtained health status (Geest et al., 2004). This discrepancy may be associated with variance arising from social and demographic factors such as gender and age, implying that SRH may be considered a more *holistic* evaluation of health and prognosis compared to traditionally obtained health information, such as blood pressure or lab tests.

Of course, when reporting SRH, respondents at least partially draw upon known information about their medical status. However, various sociodemographic factors (e.g., sex or age) may influence how an individual uses objective information when self-rating their health. These differences may help explain why the effect (SRH predicting mortality) is stronger for men than for women. In other words, societal standards, demographics, and between-group variability can account for gender differences in the link between SRH and health outcomes. In the aforementioned study, these effects persisted over multiple follow-up interviews conducted up to 10 years after the initial baseline assessment (Idler & Benyamini, 1997). Poorer SRH was observed even 11 to 12 years *prior* to a person's death, as compared to matched surviving controls (Stenholm et al., 2014). Though age was the strongest predictor for mortality, SRH was the second strongest predictor, over and above lifestyle factors and diagnosed diseases. Moreover, SRH was the best predictor of late mortality, after accounting for the effects of age, sex, marital status, ethnic background, income, life satisfaction, and residence location (Mossey & Shapiro, 1982). More recent studies have replicated these findings using survival analysis. One prospective cohort study followed participants up to 25 years and found that higher SRH (assessed at baseline) was strongly associated with lower mortality risk (Lorem et al., 2020). Moreover, according to a recent study, the strength of SRH may be preserved within the context of multiple chronic disease diagnoses and comorbidities (Mavaddat et al., 2014). That is to say, SRH remains strongly correlated with "objective" indicators of an individual's health status. This is true even in the presence of multiple disease diagnoses, such as stroke and heart attack, and the association is not explained by other, possibly related psychosocial factors like depression.

SRH and Cognitive Aging

Beyond chronic and acute physical diagnoses, poorer SRH is also associated with a higher risk of dementia (Stephan et al., 2021; Yip et al., 2006). A study based in Canada found that SRH predicted dementia risk among older adults without cognitive impairment at baseline (or with mild cognitive impairment), but its predictive power was more varied among those who were already cognitively impaired (John & Montgomery, 2013). Cognition and SRH also moderated the effects on mortality risk. Specifically, the relationship between SRH and mortality was weaker for individuals with severe cognitive impairment (Walker et al., 2004). Given that SRH is a reflective and evaluative assessment, severe cognitive impairment may limit the ability to integrate less immediate factors involved in the overall health assessment. Although there is extensive literature on the relation between SRH and physical health outcomes, the literature linking SRH to cognitive functioning is relatively sparse. This sparsity underscores the need for more inquiry into the nature of the association between SRH and cognitive functioning. It is also important to note that mechanisms linking SRH to cognitive functioning may not parallel those linking SRH to physical health outcomes. Individuals often have awareness of salient bodily symptoms and cues, as well as access to medical feedback for determining their physical health, but changes in cognitive health are much more difficult to self-monitor, as they often occur more subtly. Early cognitive decline can reduce the accuracy of SRH, potentially weakening the correspondence between SRH and objective cognitive functioning. There are also notable cultural differences in what is considered part of general health. Such differences can meaningfully influence the extent to which individuals consider and incorporate cognitive functioning in making determinations about their SRH. All in all, these conceptual distinctions underscore the need to replicate basic associations between SRH and cognitive aging outcomes across diverse samples, thereby motivating the coordinated data analysis approach in the present study.

There are a number of theoretical frameworks for understanding why SRH may influence current or future cognitive function. One framework posits that SRH is a dynamic evaluation based on an individual's monitoring of their health and body and could thus serve as a reflection or proxy for other ongoing health-related factors that may influence downstream cognition (Benyamini et al., 2011; Winter et al., 2007). A second explanatory framework is a health process model, in which SRH is causally associated with cognition through its influence on other mechanisms that also affect cognitive health (Benyamini, 2011; Winter et al., 2007; Cotter & Lachman, 2010). While the goal of the current study was not to formally test either of these potential frameworks (but to instead replicate the basic foundational associations among SRH and cognitive health), these potential frameworks can aid in the interpretation of findings and help inform future work.

The Current Study

There is relatively limited evidence showing that SRH is related to cognitive aging, as most research focuses on physical health outcomes. Many previous studies highlight associations between SRH and mortality, functional decline, and chronic illnesses (Bond et al., 2006). The current study fills several important gaps in the literature. We operationalize and address cognitive function as a consequential outcome for individuals and address these substantive questions (regarding the relationship between SRH and cognitive function) using a coordinated data analysis (CDA) approach. Under the CDA framework, we first identified longitudinal studies meeting the inclusion criteria for the current analysis, then conceptually harmonized analytic variables. Next, we harmonized the individual study analyses so that all datasets tested an identical set of models. Lastly, we used standard meta-analysis tools to synthesize these models and draw our conclusions. We used the meta-analytic summaries as the primary test of our key hypotheses but also took into account the extent to which the individual study analyses aligned with the meta-analytic estimates in terms of both strength and magnitude when drawing our conclusions. This approach allows us to use the simpler meta-analytic point estimates to draw our basic conclusions while also taking into consideration the nuances of the individual study results (Graham et al., 2022; Hofer & Piccinin, 2009). Individual studies can yield variable and piecemeal results, which may be influenced by sample size, study design, methodologies, or the inherent variability of human behavior. These differences can sometimes lead to conflicting findings, making it difficult to draw definitive conclusions from any single study. However, replication data examining the same question from multiple data collection efforts are much more powerful and externally valid. When a body of research consistently yields similar outcomes, it lends substantial weight to the validity and reliability of its findings. Connecting various datasets with CDA strengthens generalizability and replicability. Thus, by using the CDA framework to address questions of SRH and cognitive aging, we fill an important substantive gap in the literature using a methodologically robust approach.

Our research questions were as follows: First, is SRH associated with concurrent cognitive function, prospective cognitive function, risk of cognitive impairment, and/or risk of dementia? We predicted that individuals with higher SRH at baseline would have better concurrent cognitive function, prospective cognition, and lower odds of cognitive impairment and dementia. Second, do the associations between SRH and concurrent/prospective cognitive function, as well as risk for cognitive impairment or dementia, vary as a function of sex or age? We did not have a clear hypothesis for this research question, so these analyses were considered exploratory. This study was preregistered prior to downloading the analytic samples and conducting analyses (https://osf.io/zvxu5). All study materials, including analytic scripts and outputs, are available on the OSF site (https://osf.io/pd8mh/). The data used are available either via the individual study portals, available for direct download on ICPSR, or via a formal DUA with the individual study site.

Methods

The current study builds upon previous work by addressing whether SRH is associated with cognitive function both concurrently and prospectively. Beyond continuous measures of cognitive functioning, we also examined whether SRH was associated with the odds of developing cognitive impairment or dementia. Using the CDA methodological framework (Graham et al., 2022; Hofer & Piccinin, 2009; Mroczek et al., 2021; Willroth et al., 2022), the current study sought to provide evidence for whether these associations replicated across several long-term longitudinal studies of aging and were robust to the inclusion of key covariates, including objective health (i.e., chronic conditions), depressive symptoms, sex, age, and education. Finally, given prior research identifying age and sex as moderators in the relationship between self-reported health variables and cognitive health (as detailed below), we examined whether the detected effects were moderated by baseline age and sex.

Studies

Data sets for the current study were identified and selected using the Integrative Analysis of Longitudinal Studies of Aging and Dementia platform (https://www.maelstrom-research.org/network/ialsa), the Gateway to Global Aging metadata repository (https://g2aging.org), and ICPSR (https://www.icpsr.umich.edu). The minimum inclusion criteria for each data set included: a single assessment of SRH at baseline (or early in the study, later re-slotted as a “baseline” for our analytic purposes), a concurrent (or closely aligned) cognitive battery (specific tests allowed to vary slightly), and an additional cognitive battery at a longitudinal follow-up (number of years allowed to vary). Of the datasets that met the inclusion criteria and were included in the preregistration, the Hawaii Longitudinal Study (HLS) and the Cognitive Function and Aging Study (CFAS) were dropped from the final analyses due to data accessibility issues. A total of 15 studies were included in the current study: The China Health and Retirement Longitudinal Study (CHARLS) (Zhao et al., 2014), the Canberra Longitudinal Study (CLS) (Christensen et al., 2004), the Costa Rican Longevity and Health Aging Study (CRELES) (Rosero-Bixby et al., 2019), the English Longitudinal Study of Ageing (ELSA), (Steptoe et al., 2013; Zaninotto & Steptoe, 2022), the Health and Retirement Study (HRS) (Sonnega et al., 2014), the Japanese Study of Aging and Retirement (JSTAR) (Ichimura et al., 2009), the Longitudinal Aging Study of Amsterdam (LASA) (Hoogendijk et al., 2025; Huisman et al., 2011), the Lothian Birth Cohort-1936 (LBC36) (Deary et al., 2012; Taylor et al., 2018), the Long Beach Longitudinal Study (LBLS) (Zelinski & Kennison, 2001), the Mexican Health and Aging Study (MHAS) (Wong et al., 2017), Midlife in the United States (MIDUS) (Brim et al., 2004), the Swedish Adoption/Twin Study on Aging (SATSA) (Pedersen, 2015; Pilgrim et al., 2024), Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan et al., 2013), and the Wisconsin Longitudinal Study Graduate (WLSG) and Sibling Samples (WLSS) (Herd et al., 2014). See Table 1 for study-level information about the individual datasets. Full study descriptions are available in Supplementary Material.

Below is a brief summary of the data included in the present report:

Measures

Self-Rated Health was the key predictor for all analyses. All studies included at least one item assessing a person's subjective health at baseline (Behr et al., 2023); for example, "how healthy do you believe you are" or "how would you say your health is these days". Most items were assessed on a 5-point Likert-type scale, with 5 corresponding to the healthiest option. Within each study, SRH was transformed into z-scores, so estimates were comparable across all studies in standard-deviation units.

Cognitive Function. Each study created a composite cognitive function score at two measurement occasions: First, a (baseline) cognitive function score was taken from the measurement occasion concurrent with the measurement of SRH (at or close to study baseline). Second, a cognitive function score was pulled from a given study's *latest* longitudinal follow-up time between the two assessments, which ranged from 3 to 27 years. The specific cognitive tests and domains were allowed to vary across studies. Studies assessed a range of domains, and we focused on pulling cognitive domains that were common across studies for harmonization purposes. These domains included episodic memory (e.g., immediate/delayed word recall), working memory (e.g., backward digit span), speed of processing (e.g., backward counting), verbal fluency (e.g., category naming), reasoning (e.g., progressive matrices), and executive function (if distinct from reasoning or general cognitive composite). To conceptually harmonize these measures, each study standardized the individual cognitive domains using z-scores (within wave), computed the mean of the standardized individual domains, and then z-scored the averaged composite, resulting in a single global cognitive composite for each measurement occasion (henceforth referred to as concurrent and prospective cognition). This approach is commonly used for creating global cognitive composites and can be interpreted in standard deviation units, also allowing for comparable estimates across studies for the current analysis and for external investigations moving forward.

Cognitive Impairment was assessed in several studies using the Mini-Mental State Examination (MMSE), Telephone Interview for Cognitive Status (TICS), or Montreal Cognitive Assessment (MOCA). Impairment was coded as 1 = yes; 0 = no, using established cut-off criteria for each instrument (i.e., MMSE <26; TICS <36; MOCA <19). Six of the studies had data on cognitive impairment, with three using MMSE TICS, one using MOCA, and two using a Dementia Questionnaire.

Dementia Status. Studies that collected dementia diagnosis information did so via either self-report, informant report, or International Classification of Diseases (ICD) criteria. Previous research has shown that variation in the method of collecting dementia status yields similar results that closely correspond to expert consensus on dementia, thus lending confidence in allowing these methods to vary because they, by and large, still characterize dementia (Beck et al., 2024). Ten of the studies had information on dementia diagnosis, with two studies using a dementia questionnaire and the other eight studies using self- or informant-report of dementia status or ICD criteria.

Moderators: Sex and Age. Sex differences in cognitive aging have long been observed, with women consistently showing faster cognitive decline than men (Levine et al., 2021) as well as a markedly higher prevalence of dementia, particularly in later years (Andersen et al., 1999). While the factors contributing to these sex-specific differences in cognitive aging are complex, studies point to sex differences in health-related risk factors as potential mechanisms, such as cardiovascular health (e.g., Dufouil et al., 2014), inflammation (e.g., Hall et al., 2013), and changing hormone levels (Mosconi et al., 2017). In addition to these findings from the broader literature, studies specifically investigating the relationship between multiple health-related behaviors (such as physical exercise and social engagement) and subsequent cognitive decline have identified gender as a moderating factor (Barha & Liu-Ambrose, 2018; Barha et al., 2019; Dixon et al., 2025; Martin et al., 2025). In light of this body of evidence, the present study included sex as a moderator in the analyses reported below.

In addition, recent research has also pointed to the role of age as a moderator of the relationship between self-reported dementia and cognitive function (Spalding et al., 2025). According to these findings, older adults (but not younger adults) exhibited a significant association between self-reported concerns about dementia and cognitive outcomes across multiple domains, potentially due to the emphasized self-relevance of cognitive decline in older age. In a recent study (Luo et al., 2023) that used the same datasets as in the present study, age was identified as a moderator in the relationship between self-reported individual differences (i.e., Big Five personality traits) and general health. Given these recent findings, the current study tested whether the key effects varied as a function of an individual's age (and sex) at baseline. For all studies, age was centered at 65 (in decades), and sex was dummy coded (1 = F, 0 = M).

Covariates: Education, Depression, Chronic Conditions. Education and depressive symptoms were assessed at baseline and z-scored within each study. Chronic conditions were calculated as the z-scored sum of self-reported heart conditions, diabetes, hypertension, stroke, and cancer.

Data Analysis

Individual Study Analysis. For the concurrent and prospective cognitive function models, we used linear regression using the lm function in the *stats* R package (R Core Team, 2013). Cognitive impairment and dementia were coded as binary variables, so we used logistic regression for these two outcomes. For all four outcomes, models were built and tested in order from the simplest to the most complex. The first models were unadjusted associations between SRH and the outcomes. In the second set of models, we adjusted for basic demographics (age, sex), then added indicators of socio-economic status (education), and mental/physical health (depression, chronic conditions). In a third set of models, we added the interaction terms separately to assess the moderating effect of age and sex and then tested these moderation models both unadjusted and fully adjusted for covariates.

The unadjusted models were used as the primary tests of our study hypotheses, and the adjusted models were evaluated for evidence of robustness. Additional sensitivity analyses were conducted for the prospective models to assess whether the effects were robust to the inclusion of concurrent cognitive function (i.e., whether SRH predicts cognitive function prospectively after controlling for baseline cognitive function). We used p = .05 as our alpha criterion to evaluate statistical significance. However, as this is a CDA, the focus of our interpretation is the degree of consistency in the magnitude and direction of the effects of interest, so binary evaluations of significance were of less interest.

Meta-analysis Key estimates from each model were synthesized using random effects meta-analysis (Viechtbauer, 2010). We used both the individual study results and the meta-analytic summaries to draw conclusions. We examined the individual study estimates to evaluate consistency of effects in both magnitude and direction, and then the meta-analytic estimates served as our formal hypothesis test (i.e., whether and to what degree SRH was associated with various indices of cognitive health). In cases where the between-study heterogeneity was high (evaluated via I^2 and Q), we added study-level moderators (country, baseline year, and follow-up time when appropriate) to account for the variation in effect size.

Results

Below, we report the results for the individual study analyses along with general patterns and consensus across the individual studies. We present forest plots of the main effects and figures for the significant moderation models, along with the meta-analytic summaries. Due to space restrictions and study-specific variations, all tables presenting the full model summaries for the individual studies can be found in the online material (https://beck-lab.github.io/srh-cog-cda/).

Concurrent Cognition

SRH was concurrently associated with cognitive function, suggesting that individuals who reported better health at baseline also had better cognitive function at baseline. This effect was significant in 14 of the 15 studies and was supported by the meta-analytic summary ($B = 0.071$ ($se = 0.007$), $p < .001$). Although the meta-analysis detected statistically significant heterogeneity in this result (Q = 506.78, $df = 14$, $p < .001$), nearly all studies had a significant effect in the same direction and of relatively similar magnitude. These effects were robust to the inclusion of covariates ($B = 0.024$, $se = 0.004$, $p < .001$), suggesting that an individual's subjective perception of their health predicts better concurrent cognitive function, over and above the effects of age, sex, education, depressive symptoms, and chronic conditions (Figure 1).

The association between SRH and concurrent cognitive function was moderated by age at baseline in the adjusted models for 6 of the 13 studies, and the meta-analytic summary was significant, $B = 0.008$ ($se = 0.004$, $p = 0.036$). This suggests that the association between SRH and concurrent cognitive function was most pronounced among older adults (see Figure 2). Significant heterogeneity in this interaction was observed (Q = 98.53, $df = 12$, $p < .001$), which was not accounted for by either baseline year or country in the metaregressions. However, the studies showing the significant interaction effect tended to have younger samples at baseline (average baseline age for the significant samples = 59 vs. 67 for the non-significant samples).

Lastly, the association between SRH and concurrent cognitive function was not moderated by sex ($B = 0.007$, $se = 0.004$, $p = 0.089$), suggesting that the association between SRH and concurrent cognitive function did not vary between male and female participants.

Prospective Cognition

SRH was prospectively associated with cognitive function in 13 of the 15 studies, and was supported by the meta-analytic summary ($B = 0.070$ $se = 0.005$, $p < .001$). This suggests that individuals who reported being in better health at baseline had better cognitive function at longitudinal follow-up (see Figure 3). There was high heterogeneity (Q = 221.19, $df = 14$, $p < .001$), which was partially explained by country and baseline year. Upon further investigation, we found that both of these effects were driven by the fact that the CLS (based in Australia, baseline in 1990) was the only study with a negative (albeit non-significant) association, while all other studies showed a positive association. CLS tended to be a highlyeducated sample, so there may be a healthy survivor effect at play. The effect was of similar magnitude across follow-up intervals, ranging from 3 to 27 years. This effect was robust to the inclusion of covariates ($B = 0.022$, $se = 0.004$, $p < .001$), indicating that perceived health was associated with cognitive function at the longitudinal follow-up, over and above an individual's sex, age, education, depressive symptoms, and chronic conditions.

The associations between SRH and prospective cognitive function were not moderated by age at baseline, as evidenced by non-significant interaction terms in 9 of the 13 studies, and a non-significant meta-analytic summary ($B = -0.001$ $se = 0.002$, $p = 0.824$). The associations between SRH and prospective cognitive function were also not moderated by sex ($B = 0.006$, $se = 0.004$, $p = 0.127$), suggesting that the association between SRH and prospective cognitive function did not vary between male and female participants.

Cognitive Impairment

SRH was associated with the odds of developing cognitive impairment, as indicated by the meta-analytic summary ($B = -0.115$, $se = 0.033$, $p = 0.001$). This effect was significant in five of the studies included in this analysis, suggesting that individuals with higher self-reported health had lower odds of developing cognitive impairment over the course of a given study (but this association was not present in the other studies). This effect was not significant in the fully adjusted models ($B = -0.058$, $se = 0.037$, $p = 0.123$).

Dementia

SRH was significantly associated with the odds of developing dementia in six of the ten studies analyzed herein, and this effect was also significant in the meta-analytic summary ($B = -0.140$, $se = 0.043$, $p = 0.001$). This suggests that individuals who reported being in better health at baseline had lower odds of developing dementia over the course of the study (see Figure 4). This effect was robust to the inclusion of covariates ($B = -0.086$, $se = 0.041$,

$p = 0.034$). The meta-analytic summary indicated there was high heterogeneity in both the unadjusted (Q = 148.54, *df* = 9, *p* < .001) and fully adjusted (Q = 41.38, *df* = 7, *p* < .001) models. The variability in the effect of SRH on the odds of dementia was not meaningfully explained by follow-up time or country.

Discussion

The current study examined whether an individual's subjective perception of their health was related to their objective cognitive function both cross-sectionally and prospectively, as well as their odds of developing cognitive impairment or dementia at a later follow-up. Using the CDA methodological framework (Graham et al., 2022; Hofer & Piccinin, 2009; Mroczek et al., 2021; Willroth et al., 2022), we examined these associations using conceptually harmonized constructs and models, providing a methodologically rigorous approach to test our hypotheses.

Our findings indicated that SRH was associated with both cross-sectional and prospective cognitive function. This effect was robust to the inclusion of covariates, including an indicator of objective health (operationalized as the number of chronic conditions) and baseline cognitive function. The majority of the included studies detected a significant effect. In nearly all models, the significant associations between SRH and cognitive outcomes remained after accounting for education. However, using education as a covariate may remove meaningful variance in later-life cognitive differences, since early-life cognitive differences may influence educational attainment, which in turn shapes subsequent cognitive outcomes. Additionally, there was significant heterogeneity in these effects; however, our study-level moderators rarely meaningfully accounted for this variation. Visual comparison of the individual effects suggests generally high similarity across studies in the magnitude and direction of the effects. The findings on cognitive impairment and dementia were conducted on a subset of studies, and results were more mixed, perhaps as a result of the more circumspect test. For the impairment models, HRS, LBC, SATSA, WLSG, and WLSS detected significant effects in the expected direction. Other studies yielded null findings, and the meta-analytic summary was also null for the unadjusted and fully adjusted models. For dementia, half of the studies detected a significant effect in the expected direction. This was supported by the meta-analytic summary, which suggested that individuals with better perceived health at baseline were less likely to develop dementia over the course of the study, over and above demographic factors and chronic conditions. These findings are generally consistent with the existing literature (Stephan et al., 2021; Yip et al., 2006).

We tested baseline sex and age as person-level moderators of these associations and found primarily null interactions. This suggests that, across nearly all individual study models, male and female participants experienced similar associations between SRH, cognitive function, and risk of cognitive impairment or dementia. While this deviates from previous findings reporting sex as a moderating factor in the relationship between health-related behaviors and cognitive decline, it is worth noting that these prior studies focused on behaviors that show sex-specific effects themselves (e.g., physical activity, social engagement), whereas the present study did not.

Age moderated the effect for concurrent cognition only, suggesting that these associations were stronger among older adults. For older adults, the effect was more pronounced, suggesting that, among this group, lower perceived health was associated with poorer cognitive function. This finding follows a pattern of results described above (Spalding et al., 2025), in which only older participants showed a significant association between self-reported concerns about dementia and cognitive decline. As suggested by Spalding and colleagues, this relationship may be influenced by the typically increased self-relevance of physical and mental decline in later years, potentially drawing greater attention to experiences of change in these areas.

These findings are also generally consistent with work by Luo et al. (2023) and others suggesting that associations between individual-difference factors and health may be differentially impactful at different ages. However, this interaction effect was significant only in the cross-sectional model (not the prospective model). This suggests that, for older adults, their incidental awareness of their health at a given point in time is related to their cognitive performance at that same point in time, but these effects may not hold longitudinally.

The overall cross-sectional findings are not terribly surprising given that health behaviors, physical health, and cognitive health are correlated. We cannot rule out reverse causation in these models. However, the fact that SRH was also a robust predictor of later cognitive health and dementia risk is noteworthy: it suggests that an individual's perception of their health at a given point in time serves as a non-trivial forecasting of future health.

It is important to note that cognitive decline can gradually reduce insight and self-monitoring. Therefore, the processes linking SRH to cognitive outcomes may differ from those linking SRH to physical health, underscoring the utility of distinct examinations of the associations between SRH and cognitive function. Cultural context also influences how individuals interpret the concept of health; for example, cognitive functioning may be considered central to conceptions of overall health and aging in some cultures but not others. These cultural differences may influence how people incorporate cognitive information into their SRH and might help explain variation across studies. Although links between SRH and physical health are well established, evidence relating SRH to cognitive outcomes has been relatively inconsistent and often based on single-study designs. The limited size of the SRH and cognition literature further highlights the contribution of the present study. By utilizing coordinated analyses across multiple longitudinal datasets from around the world, the current study provides a more robust and generalizable test of these associations and shows that SRH is associated with cognitive outcomes even after accounting for chronic conditions.

SRH as a construct represents a relatively accurate reflection of other indicators of health. Respondents typically have a reasonably good understanding of their overall health. In fact, they likely draw upon a number of underlying sub-domains when answering this single item. For example, they often know what diagnoses they currently have, how well they are doing at treating those conditions, the extent to which they engage in riskier health behaviors such as smoking, heavy drinking, risky sexual behavior, and how physically active they are. People also often have a decent notion of how good they "feel". This subjective sense can reflect other underlying physiological systems that may be in a state of dysfunction (i.e., if people feel bad physically). These intuitions may indeed be part of a causal chain that is impacting their health (by motivating people to engage in positive health behaviors), thus lending credence to the idea of SRH being a valuable target of information for forecasting future downstream health.

The observed effects in the current study were less consistent in our dementia and cognitive impairment models than in our concurrent or prospective cognitive function models. It is possible that cognitive dysfunction can reduce an individual's ability to accurately assess their own subjective health, leading to less reliable estimates. Further, estimating dementia or MCI at a single time point doesn't fully capture the longitudinal and often non-linear process of cognitive decline that leads to an individual meeting the cutoff. Future work can help disentangle this by focusing on transitions between normal cognitive function, cognitive impairment, and dementia. Furthermore, when using the CDA framework, a distribution of effect sizes is expected, highlighting the importance and utility of CDA. This allows both significant and non-significant results (which otherwise may remain unpublished or uncited) to contribute to the evidence base, helping to reduce the risk of publication bias and false positives.

These findings also build upon a growing body of evidence that patient-reported outcomes are a valuable tool for practitioners to easily and accurately tap into how well a person is doing *just by asking them*. Individuals tend to be fairly accurate in reflecting on their health, as they draw upon known details about their health status (e.g., do I have high blood pressure, how moderate has my alcohol intake been recently). SRH could also be part of the causal chain linking other individual difference factors to later life health. For example, an individual higher in neuroticism is more likely to engage in risky health behaviors, develop chronic conditions (Jokela et al., 2014) or dementia (Beck et al., 2024), and die sooner (Graham et al., 2017; Yoneda et al., 2023). Incidentally, these same individuals are also more likely to rate themselves as being in poorer health (Stephan et al., 2020). Additionally, SRH is also associated with other psychosocial factors such as social health (H. Y. Lee et al., 2008) and loneliness (Harrington et al., 2023; Sol et al., 2023). All of these factors are also related to cognitive health (Stephan et al., 2020) and dementia risk (Beck et al., 2024). Thus, taking a person-centered approach to understanding health has great potential for future early intervention and healthcare delivery work as a non-time-intensive, low-cost, and efficient way of identifying individuals who are at risk for poor health as they age (John & Montgomery, 2013; Montlahuc et al., 2011; Yip et al., 2006).

Limitations and Future Directions

The results presented in the current study are among the most robust replications of the associations between SRH and several cognitive aging outcomes to date. Nevertheless, there are limitations to this work that warrant mention. We were limited in data availability to studies that were collected in countries that are primarily industrialized, educated, and democratized. The HRS family of studies (and others) has greatly diversified the studies available beyond the predominantly White samples seen in aging research, allowing us to include older adults from Mexico, Costa Rica, China, and Japan. This is an excellent improvement in the generalizability of our findings. Of course, this can and will be continually improved upon as additional studies become available for longitudinal analysis.

Additionally, while we found a high level of consistency in the direction and magnitude of our hypothesized effects, statistical heterogeneity was still detected, which was not accounted for by our study-level moderators. There remains the possibility that untested moderators may be driving the variation in effect sizes, though some amount of variability in the true effect is to be expected and may be attributable to sampling variability not readily captured by measured characteristics (Borenstein et al., 2017). Additionally, other factors not tested in the current study also certainly impact longitudinal cognitive function and risk of impairment in older adults, including other biological and genetic indicators (for example, polygenic risk). Future work should deepen the exploration of psychosocial predictors to include these factors as possible moderators or mediators.

Lastly, shared variance in psychosocial measures of individual differences and health could be at play. Future work can address these limitations and expand on the current findings by exploring the unique and independent effects that psychosocial and self-report factors have on health by testing several of these in the same models (e.g., personality traits and SRH). Future work will also benefit from using a subset of studies in the current paper to explore more time-intensive longitudinal models to more deeply understand the longitudinal dynamics of SRH and its effects on health decline in older age (e.g., via growth curve and variants of cross-lagged panel models).

Conclusion

How does SRH predict cognitive health? The current study used the CDA methodological framework to examine associations between SRH and four cognitive health indicators in 15 large longitudinal studies. SRH was related to both concurrent and prospective cognitive function, as well as risk of dementia, and these results were consistent across nearly all studies. These effects were also robust to the inclusion of possible confounders and covariates, including chronological age and chronic conditions. Findings suggest that, by using a single-item question, an individual's perception of their health can be a reliable indicator of future health and cognition. Knowing the predictive power of SRH could help inform early intervention, policy, and healthcare delivery systems to prevent poor health in later life more effectively.

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Conflict of Interest

None

Data Availability

The current study used data from 15 longitudinal studies of aging. Of these, 12 were publicly available or available to qualified researchers and accessible for download on either the study website or via data repositories (CHARLS, CRELES, ELSA, HRS, JSTAR, LBLS, MHAS, MIDUS, SATSA, SHARE, WLSS/G). The CLS, LBC, and LASA studies are not publicly available due to international data sharing restrictions and thus were analyzed by a member of the individual study's team. All analytic code is available for download on OSF as well as all study outputs. The analysis plan for the current paper was preregistered (https://osf.io/zvxu5).

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Table 1. *Study Descriptions*

Study	Country	Year	Follow-up (years)	*N*	Age (years) Mean	Age (years) Range
China Health and Retirement Longitudinal Study (CHARLS)	China	2011	7	24,754	57	18-115
Canberra Longitudinal Study (CLS)	Australia	1990	12	872	76	70-95
Costa Rican Longevity and Health Aging Study (CRELES)	Costa Rica	2005	4	5,620	69	54-110
English Longitudinal Study of Ageing (ELSA)	England	2003	17	18,924	61	17-90
Health and Retirement Study (HRS)	USA	2006	12	18,444	68	25-104
Japanese Study of Aging and Retirement (JSTAR)	Japan	2007	3.3	7,070	63	47-77
Longitudinal Aging Study of Amsterdam (LASA)	Netherlands	1992	11.5	4,868	67	55-86
Lothian Birth Cohort-1936 (LBC36)	Scotland	2004	12	864	70	68-71
Long Beach Longitudinal Study (LBLS)	USA	1997	3	1,281	70	29-98
Mexican Health and Aging Study (MHAS)	Mexico	2012	6	14,440	64	20-107
Midlife in the United States (MIDUS)	USA	2004	9	4,022	56	30-84
Swedish Adoption/Twin Study on Aging (SATSA)	Sweden	1984	26	2,069	60	26-93
Survey of Health, Ageing and Retirement in Europe (SHARE)	27 European Countries + Israel	2003	15	29,825	64	26-102
Wisconsin Longitudinal Study Graduate (WLSG)	USA	1993	27	6,862	54	53-56
Wisconsin Longitudinal Study Sibling Samples (WLSS)	USA	1993	27	4,010	53	33-75

Note. USA = United States of America.

Figure 1. Associations between self-rated health and concurrent cognitive function

Alt Text: Forest plot illustrating the distribution of point estimates across studies for the association between self-rated health and concurrent cognitive function, showing that for all studies lower SRH was associated with worse cognitive function.

Figure 2. Associations between self-rated health and concurrent cognitive function, moderated by age. The black dashed line represents the weighted average

Alt Text: Graphical representation of the moderating effect of age on the association between self-rated health and concurrent cognitive function, showing a steeper effect among older adults, replicating across multiple datasets

Figure 3. Associations between self-rated health and prospective cognitive function

Alt Text: Forest plot illustrating the distribution of point estimates across studies for the association between self-rated health and prospective cognitive function, showing that for all studies lower SRH was associated with worse cognitive function.

Figure 4. Associations between self-rated health and the odds of developing dementia

Alt Text: Forest plot illustrating the distribution of point estimates across studies for the association between self-rated health and dementia risk.

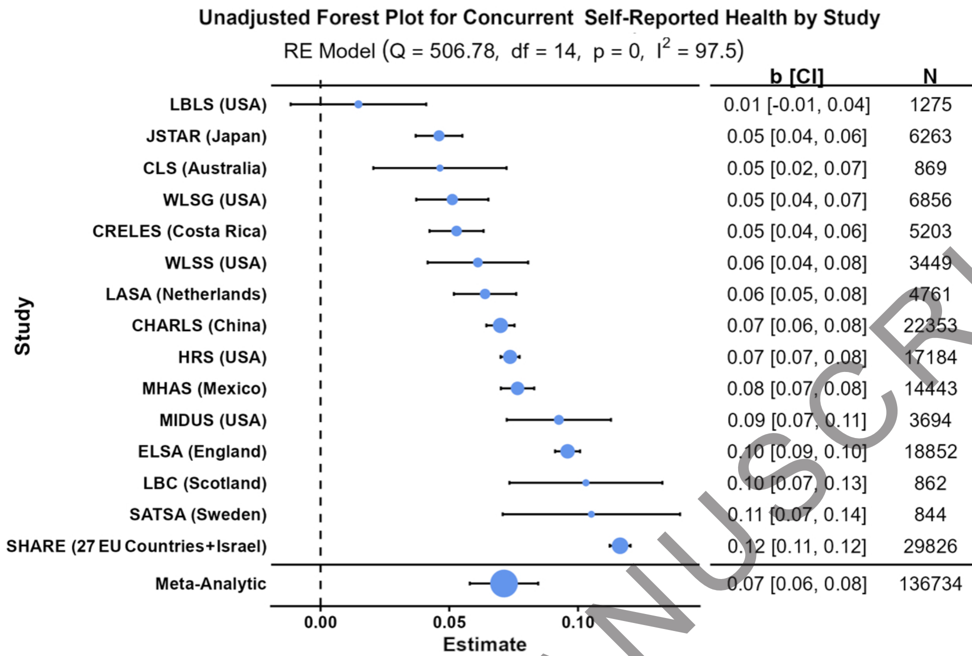

Figure 1

323x213mm (100 x 100 DPI)

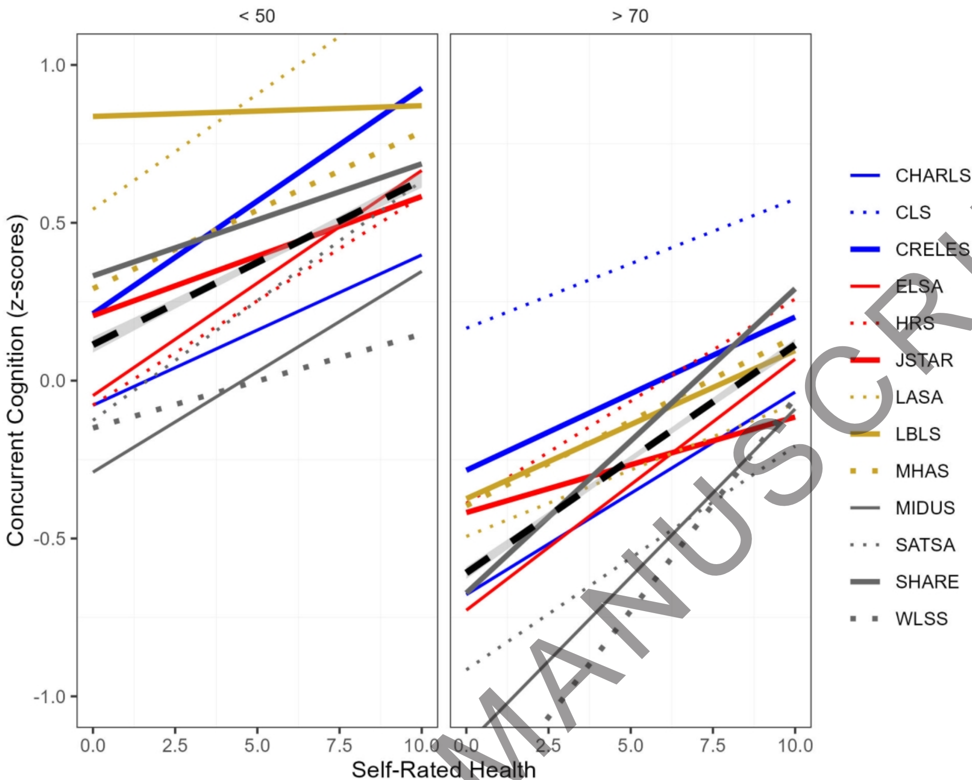

Figure 2

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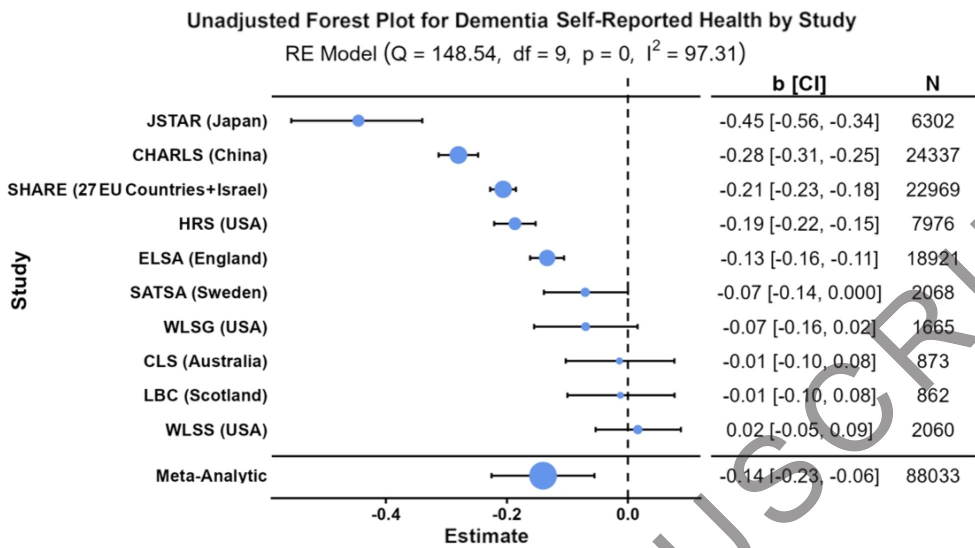

Figure 3

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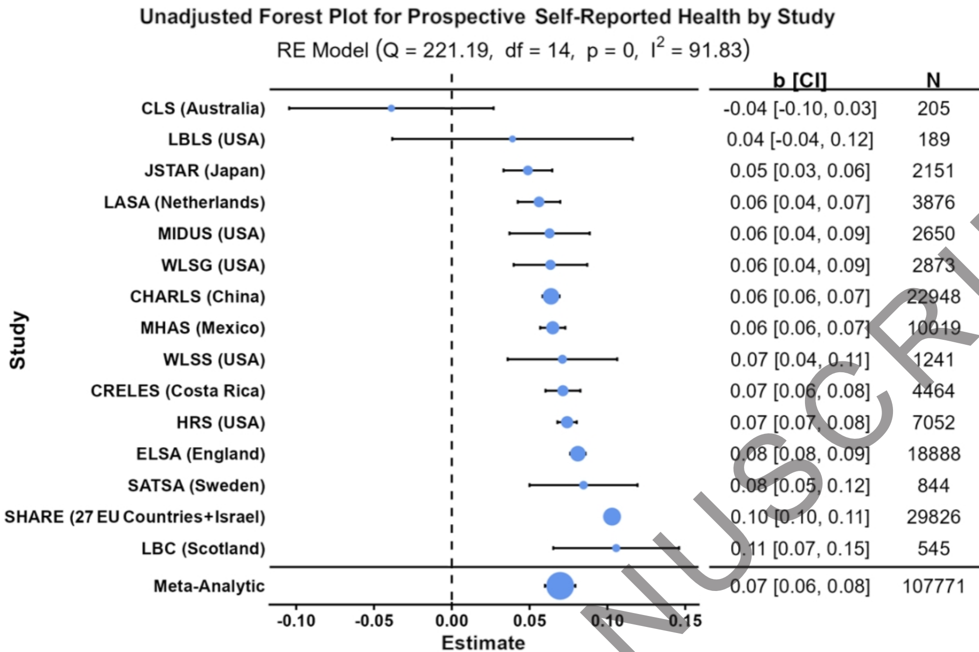

Figure 4

323x211mm (100 x 100 DPI)