

Do subjective health measures predict cognitive and physical health among older adults globally?

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Long Abstract

Introduction:

Most studies investigating the validity of self-assessed health only consider a small portion of the global population; such as national data (Lee, 2000; Crossley and Kennedy, 2002) or small country groups or subnational groups (Kunst et al., 2005; Nielsen and Krasnik, 2010). In the current study, we try to provide an international comparison of harmonized measures of self-assessed and objective health which cover the majority of the world's population aged 50 and above. We try to analyse how self-assessed cognitive and physical health relates to objective measures of cognitive and physical health.

Furnham (2001) finds, in a review paper (most studies conducted in western countries), that correlations between self-assessed and measured cognition ranges from 0.19 to 0.39. A random-effects model analysis of data from 107 relevant studies (673 effect sizes) indicated a low but significant weighted mean correlation between MSE and memory performance, $r = 0.15$ (Beaudoin and Desrichard, 2011). Another meta-analysis based on 154 effect sizes reported in 41 published studies find a stronger ($r = 0.33$) positive relationship, but weaker relationships when less frequently considered dimensions of cognitive ability are used (e.g., reasoning speed), which significantly decreases the magnitude of the relationship (Freund and Kasten, 2012).

Additionally self-reported physical health has proved to be often a useful indicator of individual's health as it relates to morbidity and mortality (Mossey and Shapiro, 1982; Lee, 2000). However, the reliability and validity of self-assessed health in terms of predicting objective health has been discussed in many studies (Mossey and Shapiro, 1982; Lee, 2000; Crossley and Kennedy, 2002; Kunst et al., 2005; Nielsen and Krasnik, 2010). One major concern with this subjective measure across individuals is that cultural and contextual factors could affect the respondents' assessments. For instance, respondents may be likely to report 'very poor' health only if they feel they are much less healthy than others of the same sex, and age (Groot, 2000; Layes et al., 2012). Additional concerns can be found in cross-country studies, as response categories may also have different connotations, so dependent on country-specific differences. For instance Jürges (2008) investigated cross-country differences in self-reported health within Europe. There Danish and Swedish respondents tended to over-rate their health, whereas Germans tended to underrate their health. Furthermore older respondents tend to have a 'milder' view of their health and be more optimistic about their health than younger individuals (Groot, 2000).

The validity of international comparisons are often debated (Datta Gupta et al., 2010; Skirbekk et al., 2012). The relationship between self-assessed health and mortality differs across socio-economic groups according to evidence from GSOEP from Germany (Jürges, 2008) and SHARE from Europe (Kunst et al., 2005).

With the use of objective cognitive measures, such as harmonised 10-word memory tests (tests always given in respondent's language, 1 minute to recall), and standardised physical tests (such as grip strength), we can measure the validity of cognitive and physical subjective health indicators.

Study population:

We use the surveys HRS, JSTAR, SAGE, and SHARE.

Measures:

We investigate objective and subjective physical as well as mental health measures. We use immediate recall and grip strength, both measures relevant for health outcomes (Nilsson et al., 1997; Rantanen T, 1999).

Mental health is assessed by a memory test (immediate recall), where ten words are read out in the respondent's native tongue and the respondents have one minute to recall as many words as possible. Grip strength is measured through a dynamometer.

Further measures of cognition and physical health will be included in the final paper.

Results:

Preliminary results show, that correlations between subjective and objective measures are generally low to moderate. The correlations are low to moderate for both men and women, nevertheless country variation can be identified for both sexes (see Tables 1 and 2).

	men	women
China	0.244	0.259
Ghana	0.175	0.209
India	0.186	0.184
Mexico	0.138	0.094
Russia	0.305	0.321
South Africa	0.178	0.231
United States	0.236	0.219

Table 1: Spearman's rank correlation between self-reported cognitive health and immediate recall performance for men and women by country.

	men	women
C-Europe	0.261	0.312
China	0.162	0.127
Ghana	0.193	0.191
India	0.210	0.174
Japan	0.191	0.230
Mexico	0.088	0.038
N-Europe	0.220	0.219
Russia	0.262	0.307
S-Europe	0.319	0.364
South Africa	0.210	0.170

Table 2: Spearman's rank correlation between self-reported health and grip strength performance for men and women by country.

References:

- Beaudoin, M., and Desrichard, O. (2011). Are memory self-efficacy and memory performance related? A meta-analysis. *Psychological Bulletin* 137, 211–241.
- Crossley, T.F., and Kennedy, S. (2002). The reliability of self-assessed health status. *Journal of Health Economics* 21, 643–658.
- Datta Gupta, N., Kristensen, N., and Pozzoli, D. (2010). External validation of the use of vignettes in cross-country health studies. *Economic Modelling* 27, 854–865.
- Freund, P.A., and Kasten, N. (2012). How smart do you think you are? A meta-analysis on the validity of self-estimates of cognitive ability. *Psychological Bulletin* 138, 296–321.
- Furnham, A. (2001). Self-estimates of intelligence: culture and gender difference in self and other estimates of both general (g) and multiple intelligences. *Personality and Individual Differences* 31, 1381–1405.
- Groot, W. (2000). Adaptation and scale of reference bias in self-assessments of quality of life. *Journal of Health Economics* 19, 403–420.
- Jürges, H. (2008). Self-assessed health, reference levels and mortality. *Applied Economics* 40, 569–582.
- Kunst, A.E., Bos, V., Lahelma, E., Bartley, M., Lissau, I., Regidor, E., Mielck, A., Cardano, M., Dalstra, J.A., Geurts, J.J., et al. (2005). Trends in socioeconomic inequalities in self-assessed health in 10 European countries. *Int. J. Epidemiol.* 34, 295–305.
- Layes, A., Asada, Y., and Kephart, G. (2012). Whiners and deniers – What does self-rated health measure? *Social Science & Medicine* 75, 1–9.
- Lee, Y. (2000). The predictive value of self assessed general, physical, and mental health on functional decline and mortality in older adults. *J Epidemiol Community Health* 54, 123–129.
- Mossey, J.M., and Shapiro, E. (1982). Self-rated health: a predictor of mortality among the elderly. *American Journal of Public Health* 72, 800–808.
- Nielsen, S.S., and Krasnik, A. (2010). Poorer self-perceived health among migrants and ethnic minorities versus the majority population in Europe: a systematic review. *International Journal of Public Health* 55, 357–371.
- Nilsson, L.-Gör., Bäckman, L., Erngrund, K., Nyberg, L., Adolfsson, R., Bucht, Gös., Karlsson, S., Widing, M., and Winblad, B. (1997). The betula prospective cohort study: Memory, health, and aging. *Aging, Neuropsychology, and Cognition* 4, 1–32.
- Rantanen T, G.J. (1999). Midlife hand grip strength as a predictor of old age disability. *JAMA* 281, 558–560.
- Skirbekk, V., Loichinger, E., and Barakat, B. (2012). The Aging of the Workforce in European Countries. Demographic Trends, Retirement Projections, and Retirement Policies. In *The Oxford Handbook of Work and Aging*, J.W. Hedge, and W.C. Borman, eds. (New York: Oxford University Press, USA),.