Reviewer's report

Title: Education-based health inequalities in 18,000 Norwegian couples: The Nord-Trondelag Health Study

Version: 4 Date: 24 August 2012

Reviewer: Anton Kunst

Reviewer's report:

The authors have responded to my previous concerns to mostly my satisfaction. The current paper has improved, although some shortcoming remain.

Major essential revision.

The key finding of the paper is that the relationship of health with the between-couple educational variable is stronger than with the within-couple educational variable. Following the key assumption specified in the sentence on page 8-9, the authors interpret this larger effect as evidence that there is some kind of aggregate couple-level effect, 'suggesting that partners form their socioeconomic position together". But can this result indeed be interpreted this way? I have two concerns.

- This result could have other explanations. My intuition tells me that, if a subjects' educational level is not directed included into the regression model, but instead used to derive two other variables (a couple-level variable that comes close to the subjects' education, and a unusual residual within-couple difference variable) that the former variable would be much more able to capture the effects of the subject's own education. Thus, it seem hardly a surprise to note that this couple-level variable is more predictive.

- The % variance explained in models with the couple-level education variables (as measured with the IC) is NOT larger than the variance explained with individual-level education variables (of the subject and its partner). We would however expect a LARGER percentage explained in the model with the couple-level variable, if these variables were to capture couple-level effects that are unmeasured at the individual level. But they do not.

I think that the authors should at least be able to respond to these comments, as they concern the essence of their paper.

Minor essential revisions

- The paper could be written more concisely. The introduction and discussion parts contain many parts that are not essential to the paper. These sections could be reduced by one third.

- Related to this, a stronger focus is needed on the key implication of the paper, that the evidence suggests that couples form their socioeconomic position
together. The authors should aim to discuss how educational sources could be shared. The "shared resources" theory seems useful, but is mentioned only once without reference.

- Despite the authors claim that the paper is reviewed by native speaker, the paper contains some small editorial errors (to start with: two times 'in' at the very beginning of the Abstract).

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I have no competing interests