Reviewer's report

Title: Mental health affects future employment as job loss affects mental health: Findings from a longitudinal population study

Version: 1 Date: 10 November 2012

Reviewer: Simon Overland

Reviewer's report:

This paper presents an interesting analysis of the relationship between unemployment and mental health problems. This relationship has previously been addressed in unidirectional research designs, most often focusing on risk for mental health problems as a consequence of unemployment. The bidirectional perspective taken here thus represents an important expansion of the literature. The introduction is well written, makes the case for this study very clear, and presents a relevant “wider perspective” and policy angle to the topic. The methods and results are also clear and informative. I have one question regarding the statistical modeling, and a few comments to the other parts of the paper.

Major compulsory revisions:

First, the question: The cross-lagged autoregressive model used allows for simultaneous testing of both causal pathways, and the buildup of the model is accurately described. But, did the authors consider alternative approaches at any stage? They used the Mplus software, which handles latent growth curve models (LGM), and from an outside view, there are some issues in the current model that might be overcome by using LGM:

- The model, as it is run in the current version, holds all paths consistent across waves. As I understand it, this is done to get a z-score for each causal direction that allows for comparison, but at the same time I assume this contingency reduces variance and thereby statistical power in the model?

- The model for men converged only when modifying the initial model, by opening up the fixed cross loadings in some of the earlier waves. This could suggest that the model was not all that robust, and that increased statistical power could be useful.

- The models are stratified on gender, but was it significance tested if the models are similar or unequal between men and women?

These issues might be easier to handle in a latent growth curve model:

- A univariate growth curve could be fit to the data for each of the constructs separately; one for depression symptoms and another for unemployment. If they both converge, the authors would get two sets of an intercept and slope, in other words two variables for each construct.

- Next, these could be combined in one model, and the relative strength of the
paths between the intercepts and slopes could be examined, this approach
would not require holding paths consistent, as in the current model.
- The estimators in LGM handle missing data, and could allow a larger sample
size as the current model is run on complete cases only.
- Gender differences could be tested through examining if the model is invariant
on gender, which would provide significance testing for the stratification the
authors argue for.
- As I see it, an LGM approach also provides results that are easier to
communicate. There would be less need for table 2, as the stability of the
constructs over time would be described by the growth curves. Pages 13 and 14
in the results could be shortened considerably.

The authors may have very good reasons for their choice of model, and there
may be aspects of their data that do not go well with an LGM. I would however
be interested in the authors view on this to, if nothing else, help ensure these
important and relevant data are modeled the best possible way.

Secondly; As of now, the discussion has a strong focus on the gender difference.
I am a bit uncertain as to how strong inferences one can make regarding the
gender differences as I, as far as I can tell, could not see any significance test
specifically comparing the models for men and women? (This might be
embedded in the modeling, but if so, I think it should be made explicit in the
section where the gender stratified analyses are presented).

Minor essential revisions:

If the authors retain their initial model, there are some minor comments regarding
the tables. In table 3, where the authors test model 4 against models 1 and 2, I
find it confusing that the fit statistics are presented on the same line as chi
change for the comparison with model 2. Should the fit statistics not be
presented for model 4 in itself, and therefore be placed on that line?

On the figure, the authors should write out “NILF” and “PF-10” in full, or explain
what it is, to make it easier to read the figure independently. And, is there a way
the authors could show the standardized coefficients for each of the paths
(arrows) in the model which if possible would be informative?

In the results, perhaps the authors could present how many of the participants
who at some point changed their employment status? So, the figures on
unemployment presented in table 1 – do they reflect a subset of individuals with
a loose connection to work, falling in and out of jobs? Or was there a larger set of
the sample that through the 9 waves experienced unemployment on one
occasion or in rapid cycles?

Again, if the modeling and results are kept as are: Could the authors go a bit
more in depth on the interpretation of the model in the discussion? I think many
readers would like a bit more “translation” of what can be read out of the results.
For example, the fact that there is a bidirectional effect of equal strength, could
that mean that the two variables simply fluctuate and are both caused by a third unmeasured variable or other factors outside their model? Issues such as this could be elucidated by the time-variant and invariant variables included. Another related issue; how strong causal conclusions can be drawn from a model such as this? This is important for the discussion on policy implications.

Could the authors add a reference to the "difference tests" used (pg 7), as these are key to the analyses? Could perhaps point to the Mplus manual?

A minor language issue:
pg 6, ln 4: what is meant by "de facto"?

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests.