Reviewer’s report

Title: Association between Migration and Cognitive Status among Middle-Aged and Older Adults: A systematic review

Version: 0 Date: 26 Feb 2017

Reviewer: Edmond Teng

Reviewer's report:

In this manuscript, the authors have performed a systematic review of published studies that address the relationship between migration and cognition. Their primary conclusion is that this literature remains relatively muddled, as some studies suggest that migrants have poorer cognition than non-migrants (in either the sending country or the hosting country), but others suggest that there is no difference between migrants or non-migrants. The review is comprehensive in its scope, and the authors address a number of the key issues regarding this question. However, the review itself feels a little unsatisfying and primarily descriptive, partially because of the inconsistent results, but also because the underlying hypothesis is unclear. Did the authors have an explicit theoretical basis for expecting migrants to have better or worse cognition (they appear to hint at the latter)? Are there common methodologies and/or themes that underlie the studies that showed migrant/non-migrant differences relative to those that showed no such differences? A more critical approach to the studies might help readers more successfully navigate these contradictory findings. A number of other, more minor issues are detailed below.

1. In the Introduction (p. 3), the authors state that migration is "one of the three demographic components used to assess population changes." It might be useful to know what the other two are?

2. In the Results (p. 10), the authors devote a section specifically to migrant studies among Mexican-American populations. However, since several of these results have already been presented in the preceding sections, this section feels a bit redundant.

3. There are a number of typographical errors in Table 1, most notably in the rows describing Al Hazzouri, Black, and Graves studies. Also, the authors refer to the Lawton et al., 2015 study as examining Mexican-Americans. Although the vast majority of the participants in the SALSA database are of Mexican descent (89%), the remainder have other countries of origin. It would also be useful to have the studies listed in Table 1 keyed to their numbering in the References section.

4. I agree with the authors that the key issues mediating cognitive performance in immigrants versus non-immigrants are likely to be language of testing and socioeconomic status (SES).
Is there enough information across studies to determine if this is a key feature that affects whether there is a migrant effect? Specifically, are the studies that show a difference with migration ones that do not account for language of testing and/or SES?

5. A strength of this review is that it looks at migrants versus non-migrants in both sending and hosting countries. I would presume there might be other data that document that migrants have poorer SES than non-migrants in either situation? And that the migrants who return may be more economically successful than those who do not? Such information would help support the idea that SES is the main driver of the difference between migrant and non-migrant cognitive performance.

6. In the Introduction (p. 3), the authors raise an important point about stressors related to migration being an important consideration regarding long-term cognitive outcomes. I am curious about whether the studies that compared migrants from different countries showed a consistent difference between persons of color versus Caucasians, particularly in the European studies? Could the stresses of everyday overt and/or covert racial biases be differentially affecting such populations?

7. One of the most challenging aspects of examining cognition in migrants versus non-migrants is that these groups are likely to differ across multiple demographic variables. Although virtually all of the studies included in this review attempt to statistically adjust for these differences, residual confounding may limit the effectiveness of this approach. As such, one remains concerned that any differences in cognition between migrants and non-migrants are likely to be driven by confounding variables other than migration status. This point is alluded to, but not explicitly stated by the authors.

8. Are there specific features about reason for migration that the authors think should be integrated into future studies? If so, the manuscript might benefit from further elaboration on this point. The most obvious would appear to be economic versus education versus refugee status, and one might expect differing levels of cognitive performance in each of these groups.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess
Are the conclusions drawn adequately supported by the data shown?  
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