

REFeree REPORT on the manuscript titled:

"Why and when are introverts happier?": mediation and moderation effects of the quality of social relationships and emotion regulation ability on happiness,

by: Rosario Cabello, and Pablo Fernández-Berrocal

The paper is well written and the presentation is clear.

The statistical analysis included two different models fitted with the same variables on the same data. One is a mediation model, the second is a moderation model. Each model provided different insights into the relationships between happiness and extraversion with emotion regulation ability and quality of social relationships as mediators or moderators, (and age and gender as control variables).

My report has two main parts. The first includes comments that I consider essential for the revision of the paper. The second are only suggestions that are up to the authors to consider whether to include in the revised version. I do not consider them necessary at all.

FIRST PART

There is an error in line 106. Instead of negative effect should be POSITIVE.

Figure 2 corresponding to the moderation model should be corrected. According to the figure the two moderators differ in some way, while in the theoretical fitted MODERATION model, from what I understand both are represented in the same way.

The model:

$$Y = \beta_0 + \beta_x X + \beta_1 M_1 + \beta_{1X} M_1 X + \beta_2 M_2 + \beta_{2X} X M_2 + \beta_{12} M_1 M_2 + \beta_{12X} X M_1 M_2 + \varepsilon$$

The relatively small effect size of the moderating/mediating variables (QSR and ERA) should be mentioned already in the abstract and not only in the discussion. Also, small effect sizes are obtained not only for the three way interaction, but for all the statistically significant contributions of QSR and ERA.

In Table 2 the notation * corresponds to $P < .001$. I agree that such a small P is adequate for a large sample in order to infer about significance. However, since usually * is used for .10, ** for .05 and *** for smaller levels, I suggest to use ***, or to comment about the authors' notation in the text, when referring to the table. In particular, since the bootstrap CI is with .95 level.

Include CI's for the other estimated regression coefficients in this Table.

It is unclear how the authors defined the two categories: introverted (A) and extraverted (B). It should be specified.

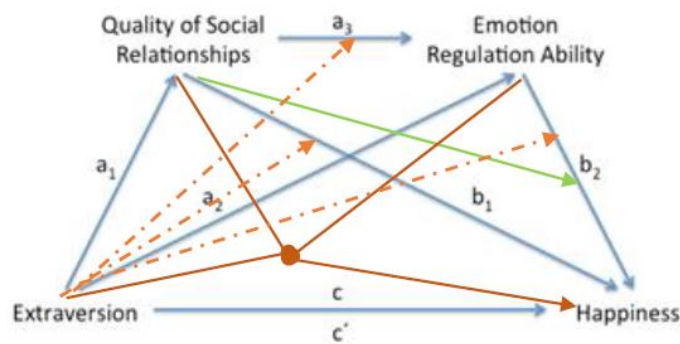
Was age included in the model as a continuous variable? Assuming a linear relationship with age as a continuous variable may be inadequate and is unrealistic. It could explain why it was found to be non-significant.

Check adding age as categorical variable. The appropriate categories can be found by examining a plot of residuals of the model fitted without age, as a function of age.

I also suggest to present the median and interquartile range for age, rather than mean and SD.

SECOND PART

The authors fitted **two separate models**, one in which QSR and ERA were moderators and one where they were mediators. Both could be easily fitted using available software (PROCESS). The conclusions were then obtained based on the results of each model separately. It would be much more complicated, but adding some more insight, (and also is more elegant...) to consider a unifying model that includes the two variables QSR and ERA as both mediators and moderators.



Fitting such a model is not technically straight forward.

Mplus software can be used with Structural Equation Modelling.

A simpler way which may also add insight is to use the SPSS option of fitting a model with only one same mediating and moderating variable. This can be done once with QSR, and once with ERA.

I refer the authors to template 74 from:

Model Templates for PROCESS for SPSS and SAS

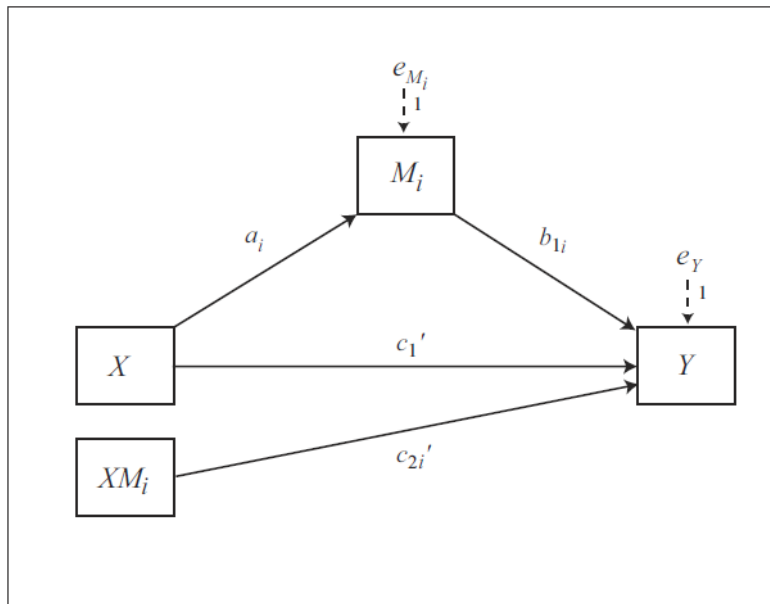


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,which I copied from that website.

One can see in the graph that when X is only included as a mediator without the moderating effect, than the direct effect does not show the path presented by c'_{2i} . We also see how the mediating effect depends on the joint values of the explanatory variables, M and X.

Statistical Diagram



Conditional indirect effect of X on Y through $M_i = a_i (b_{1i} + c_{2i}'X)$

Conditional direct effect of $X = c_1' + c_{2i}'M_i$

Note: Model 74 allows up to 10 mediators operating in parallel. PROCESS does not produce a table of conditional direct effects for model 74. With only one mediator, use model 1 to generate the conditional direct effects, specifying M as *moderator*. Effective version 2.10, when X is dichotomous, PROCESS produces only a single indirect effect of X on Y through M_i in model 74 using the formula above, setting X to its smallest value in the data.