Reviewer’s report

Title: Decision-making styles in the context of colorectal cancer screening

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Reviewer: Jozef Bavolar

Reviewer's report:

The study tries to add to the growing body of research about the relationship of decision-making styles and real-world decision outcomes. In this context, I see this aim as very valuable, but I also see some serious shortcomings that should be solved or more specifically concreted.

My comments include:

Abstract

I would avoid using the term "which styles are dominantly present among population" used not only in abstract, but also in the article. Lot of studies reporting descriptive statistics provide information about the highest values of the rational and intuitive styles in comparison with the three other styles (dependent, avoidant, spontaneous). Differences in the same variable (higher vs lower values of the concrete style) are much more important in this design of the study than differences between styles.

I would not use CRC abbreviation at the beginning abstract without the whole word. So it would be better to write "among the eligible colorectal cancer (CRC) screening population".

It is better to use "higher level (or higher score) in the …style" than "respondents with more of a spontaneous style".

Background

The authors focus mainly on the rational process of making decisions, the other processes (styles) are only marginally mentioned. A more thorough overview of studies relating decision styles (or generally decision processes) and health-related behaviour would be useful to better reason the aim and the rationale behind the study (e.g. the decision-making process of patients).

The sentence "decision-making style is also affected by context cues" does not seem as appropriate. Decision-making styles are, as even authors state, habitual propensities, so not the styles, but the use of concrete style may be affected by the characteristics of decision situation.

The paragraph concerning the association of the decision-making styles and decisional conflict is too vague - this connection should be more concretely reasoned. Why should be particular styles related to the decisional conflict? No space is devoted to the connection decisional conflict - real behaviour.

The main research question is too general - again more about differences between particular styles, not about their role in the studied decision. In aim a, I would use plural - decision-making styles - not only one style has been included. Aim b is just of minor importance. The questions are very simple, the
current data allow more advanced procedures providing a richer picture of the topic. To summarise, theoretical instruction should be more related to the aim of the article - why is it important, why some relationships can be expected, what can be a proposed direction of causal effects?

Methods

The authors should state in methods section data about the similarity of their sample and overall population. Mainly the fact that proportion of people absolving CRC screening differs substantially (89% in the sample, 73% in the population - but in 2015, not in 2017). Similar data about education are also only in limitations, not in methods section.

One measure deserves a special attention - Decisional Conflict scale. Decisional conflict was rated retrospectively, that brings serious doubts about its results. Rating of such a subjective topic after approximately one year (2016 - March 2017) is not very reliable.

Results

Table 2 should include also descriptive statistics of other variables (conflict, health literacy). Similarly, table 3 should incorporate also correlations with these variables (education could also be used as ordinal variable). The correlations among decision-making styles are just of minor importance.

I do not see a valid reason to conduct five separate logistic regressions for each decision-making style as explained by education and health literacy - why should health literacy be a predictor of any style? If authors want to present information about values of the styles in different age groups, it could be done by simple table reporting mean values of styles in each subgroup with ANOVA comparison.

Generally, the analysis is divided into many partial steps, some of them seem really redundant. In my opinion, a more direct approach would be more useful. After providing descriptive statistics and correlation analysis, two regressions would be enough. Firstly, explaining decisional conflict by the decision-making styles (maybe with demographics and health literacy as controls), secondly, explaining CRC screening using the same variables + decisional conflict. In addition, mediation/moderation analysis investigating the role of health literacy and selected style could bring more interesting, valuable and original results. By the way, it would also be more reader-friendly to report the results of regressions in tables, not in text.

How was the participation in CRC screening coded? As can be induced from "People who scored higher on a spontaneous decision-making style were more likely to have participated in CRC screening (OR = .918...)", participation was probably coded as zero, not participation as 1. Usually, the coding is reversed.

I see no sense in dividing sample according to the levels of the decision-making styles (below and over 15 - why was the sample divided according to this value?

The results are often described in terms of associations, while reporting regression results (term "predictors" would suit here more).
Discussion

As I noted in Results section, the intercorrelations of the decision making styles are of minor importance, there is just low need to discuss them in the current space.

Authors state, that there is no single objective decision? Is it right? Is not always better to take a test to be diagnosed sooner?

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

No

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

No

**Are the conclusions drawn adequately supported by the data shown?**
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Yes

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