Reviewer's report

Title: Applying psychological theories to evidence-based clinical practice: Identifying factors predictive of placing preventive fissure sealants.

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Reviewer: Mark Conner

Reviewer's report:

This manuscript reports the testing of a number of psychological models to health professionals (dentists) placing preventive fissure sealants in children. The findings can potentially inform evidence-based clinical practice. Although generally positive about the manuscript a number of issues need addressing before publication would be appropriate. A number of specific comments for revising the manuscript are listed below.

1. Introduction. I was surprised not to see more of a review of the use of these different models to understanding health professional behaviours. For example, the review by Gaston Godin and colleagues in Implementation Science might usefully be cited here.

2. Method. The sample size needs further comment. The authors note the need for a sample of 200 but report a smaller sample was obtained. It is useful to know the sample does not appear to be biased against the population. A number of the measures of constructs give some cause for concern in relation to face validity. The implementation intention measure does not appear to tap this construct to my mind and would not be a predictive construct in the sense that the other predictors are. Generalized self-efficacy in not normally part of SCT and might also be omitted. It is not clear if the table reports initial or final reliabilities. The text might usefully report the number of items and reliabilities for the scales used in the analysis.

3. Results. Table 3 is quite confusing to my eye. It was not clear why there are two blocks for the TPB for example. It may be that a table covering the theories considered one at a time is need and a separate table for predictions across theories (this might report each step of the regression). In the latter analysis it was not clear to me why intention had the strongest correlation with behavioural simulation but was not a predictor in a stepwise regression. Perhaps an analysis that included and excluded intentions for predicting behavioural simulation might provide different insights here. I also believe there are conceptual problems in including a habit measure in a prediction of behavioural simulation and it may be useful to explore also excluding this from the analysis.

4. Discussion. The interpretation of stage is problematic here as stage is essentially a measure of intention and action therefore using it to predict intention and behaviour seems difficult to interpret. This might usefully be commented on. The stepwise regressions might also be criticised for capitalizing on chance. The
argument that predictive power of constructs supports the idea that they were successfully operationalised is problematic in my view. Appeals to face or content validity might be more useful here. A final issue relates to direct and indirect predictors and overlap between predictors. Should direct and indirect attitude measures be included in the same analysis? Perhaps not. Indirect attitude and outcome expectancy measures and anticipated consequences seem very similar conceptually. Similarly PBC and self-efficacy are very similar. These issues might usefully be commented on in the discussion.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests'