Review of: "Immediate test-retest reliabilities of intention to quit smoking measures in current adult smokers"

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Potential competing interests: The reviewers are employees of Altria Client Services LLC (ALCS). This research was funded by Philip Morris International Inc., which is an independent entity not affiliated with ALCS or Philip Morris USA Inc. Philip Morris USA Inc., which is an affiliate of ALCS, has distributed and sold iQOS® heated tobacco products in the U.S. This potential conflict of interest did not impact the impartiality of our review, which was conducted to assess the scientific merit of the research regardless of the source of funding or author affiliations.

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Title: Immediate test-retest reliabilities of intention to quit smoking measures in current adult smokers.

Authors: Mainy *et al.*

Reviewers: Johnathan Gallegos and Mohamadi Sarkar, Altria Client Services Richmond, VA

Summary: The authors report on immediate test-retest reliability of intentions to quit among smokers by systematically investigating the State of Change and Motivation to Stop Scale measures in a randomized two-arm study conducted in US. They report good test-retest reliability over a brief time interval. The findings of this paper can potentially provide an important contribution to the psychometric literature on two widely used intention to quit assessments. Addressing the following points of concern/ambiguity may substantially improve the clarity and value of this work.

Reviewers Comments

1. The authors do not provide appropriate justification of the reason for the*immediate* proximity of conducting the test-retest reliability. Perhaps they could include some context for a naïve reader who may not be very familiar with the TPPI study(ies). For example, a typical study involves asking the intentions to quit at the beginning of the survey followed with showing a stimuli, e.g. showing the study participants information about the new tobacco product and/or advertising and marketing material for the new tobacco product and then again administering the questionnaire. Such a construct allows determination of the impact of the new tobacco product on intentions to quit.
2. It is unclear as to why the authors believe that assessing short interval test-retest reliabilities is important, particularly evidence[1] from literature indicates that attitudes and feelings are generally static in the absence of moderators (i.e., what you believe and how you feel will not change from moment A to moment B without the intervention of a stimulus to engender that change). This needs to be addressed in the discussion or introduction. Moreover, the author should consider providing the rationale for using the specific filler task particularly in terms of the timeframe required to answer the filler task. Accordingly, the authors should define what constitutes immediate/short-interval test-retest, particularly given that typical TPPI studies involve several lines of inquiries regarding risk perceptions and behavioral intentions.
3. The authors briefly mention additional reasoning in the discussion, noting that "it is important to understand what

changes or differences in ITQ are meaningful and occur as a result of interventions rather than random variations." However, it is difficult to ascertain this because the study does not include any measurements with and without the "intervention" of filler task. Please clarify.

4. The purpose of the filler task was described as "switching the participants' focus to other topics unrelated to smoking before the retest". Was the filler task pre-tested to ensure that it engender this effect? If not, the authors need to describe why not and outline this as a methodological weakness of their study.
5. In the methods section the authors state "Participants were randomized into SOC Study Arm 1 (n=366) or Study Arm 2 (n=469), which respectively used the SOC measure or the MTSS." However in Figure 1 the authors indicate that SOC was administered in Arm 1 and MTSS was administered in Arm 2. Please harmonize the text to reflect the description provided in the figure showing the overview of the study design.
6. The authors state "The sample size calculation and corresponding target sample size were based on attaining adequate precision for Cohen's kappa and Cohen's weighted kappa for ITQ smoking and ITQ "all tobacco and vaping products."" Rather than including such a broad qualitative statement, the authors should provide precise description of the sample size estimation. Additionally, the authors mention that the sample size was recalculated after the interim analysis. Was this a prespecified interim analysis? In clinical trials, a "statistical penalty" is if the outcome of the analysis is on the borderline between "significant" and "not significant". The authors need to provide a clear explanation of the purpose of the interim analysis and the steps taken in the Statistical Analysis Plan to account for the impact of this interim analysis.
7. The authors should consider explaining the rationale for selecting the intra-rater reliability as the primary analysis? An alternative approach could involve running a mixed model with a between factor for type of test and a within factor for test-retest.
8. The inclusion criteria for the study participants is described as "current smokers defined as individuals smoking at least 1 cigarette a day or smoking at least 4 days per month, and who had smoked more than 100 cigarettes in their lifetime." Did the authors mean 4 days per week or 4 days per month? If the latter, then clearly these individuals were not regular smokers and may not be representative of the smoking population in the US. Please provide the rational for this inclusion criteria. Given that intentions to quit might be influenced by heaviness of smoking, please include smoking history in the demographics Table 1.
9. The statement "Future psychometric validation studies with larger sample sizes should confirm the appropriateness of these measures in assessing ITQ in other populations, such as users of smokeless and smoke-free products." Is not clear. Are the authors implying that assessment of ITQ in other populations would require larger sample size? If so, then please provide some explanation why a larger sample size would be required for other tobacco product users, particularly since the authors appear to have determined the sample size for the current study based on "all tobacco and vaping products" (see comment #6 above).

[1] Cialdini, R. B., Petty, R. E., & Cacioppo, J. T. (1981). Attitude and attitude change. Annual review of psychology, 32(1), 357-404.; Petty, R. E., Wegener, D. T., & Fabrigar, L. R. (1997). Attitudes and attitude change. Annual review of psychology, 48(1), 609-647.