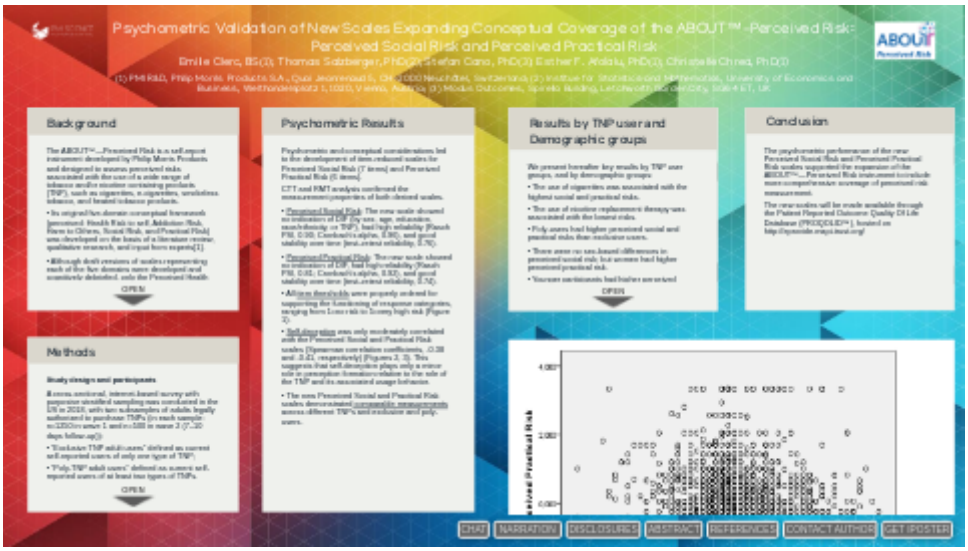
Psychometric Validation of New Scales Expanding Conceptual Coverage of the ABOUT™-Perceived Risk: Perceived Social Risk and Perceived Practical Risk



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ABOUT™ Perceived Risk

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BACKGROUND

The ABOUT™—Perceived Risk is a self-report instrument developed by Philip Morris Products and designed to assess perceived risks associated with the use of a wide range of tobacco and/or nicotine containing products (TNP), such as cigarettes, e-cigarettes, smokeless tobacco, and heated tobacco products.

• Its original five-domain conceptual framework (perceived: Health Risk to self, Addiction Risk, Harm to Others, Social Risk, and Practical Risk) was developed on the basis of a literature review, qualitative research, and input from experts[1].

• Although draft versions of scales representing each of the five domains were developed and cognitively debriefed, only the Perceived Health Risk and Addiction Risk scales were initially psychometrically validated in two quantitative studies, and “Harm to Others” was captured by single-item measures[2].

• Here, we describe the subsequent psychometric evaluation of the Perceived Social and Practical Risk scales.

METHODS

Study design and participants

A cross-sectional, internet-based survey with purposive stratified sampling was conducted in the US in 2018, with two subsamples of adults legally authorized to purchase TNPs (in each sample: n=1250 in wave 1 and n=500 in wave 2 (7–10 days follow-up)):

• “Exclusive TNP adult users” defined as current self-reported users of only one type of TNP;

• “Poly-TNP adult users” defined as current self-reported users of at least two types of TNPs.

Measures

• Draft Perceived Social Risk scale (13 items)

• Draft Perceived Practical Risk scale (9 items)

• The 8-item self-deception scale of the Balanced Inventory of Desirable Responding short form (BIDR-16 [3]; secondary measure for assessing the impact of self-deception, one aspect of social desirability).

Data analysis

The two stages (item reduction and measurement performance) of psychometric evaluation were based on the Rasch Measurement Theory (RMT) and Classical Test Theory (CTT) analysis.

PSYCHOMETRIC RESULTS

Psychometric and conceptual considerations led to the development of item-reduced scales for Perceived Social Risk (7 items) and Perceived Practical Risk (6 items).

CTT and RMT analysis confirmed the measurement properties of both derived scales.

• Perceived Social Risk: The new scale showed no indication of DIF (by sex, age, education, race/ethnicity, or TNP), had high reliability (Rasch PSI, 0.90; Cronbach's alpha, 0.96), and good stability over time (test–retest reliability, 0.76).

• Perceived Practical Risk: The new scale showed no indication of DIF, had high reliability (Rasch PSI, 0.81; Cronbach's alpha, 0.92), and good stability over time (test–retest reliability, 0.74).

• All item thresholds were properly ordered for supporting the functioning of response categories, ranging from 1=no risk to 5=very high risk (Figure 1).

• Self-deception was only moderately correlated with the Perceived Social and Practical Risk scales (Spearman correlation coefficients, -0.38 and -0.41, respectively) (Figures 2, 3). This suggests that self-deception plays only a minor role in perception formation relative to the role of the TNP and its associated usage behavior.

• The new Perceived Social and Practical Risk scales demonstrated comparable measurements across different TNPs and exclusive and poly-users.

RESULTS BY TNP USER AND DEMOGRAPHIC GROUPS

We present hereafter key results by TNP user groups, and by demographic groups:

• The use of cigarettes was associated with the highest social and practical risks.

• The use of nicotine replacement therapy was associated with the lowest risks.

• Poly-users had higher perceived social and practical risks than exclusive users.

• There were no sex-based differences in perceived social risk; but women had higher perceived practical risk.

• Younger participants had higher perceived social risk and higher perceived practical risk than older participants.

• Participants with higher education had higher perceived social risk, while this trend was inconsistent for practical risk.

CONCLUSION

The psychometric performance of the new Perceived Social Risk and Perceived Practical Risk scales supported the expansion of the ABOUT™—Perceived Risk instrument to include more comprehensive coverage of perceived risk measurement.

The new scales will be made available through the Patient Reported Outcome Quality Of Life Database (PROQOLID™), hosted on http://eprovide.mapi-trust.org/

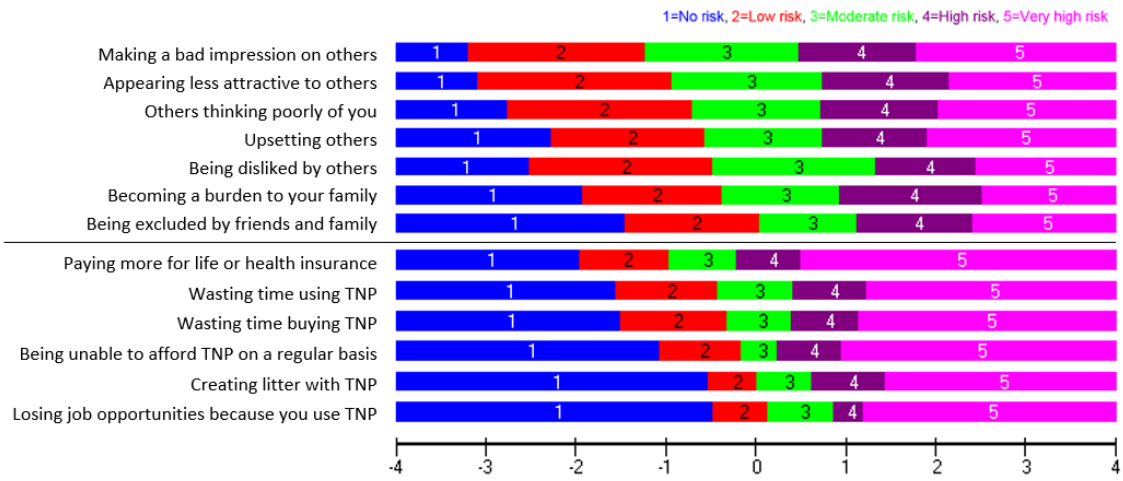

Figure 1 shows the threshold map of the items, ordered by location, in the new Perceived Social (top) and Practical Risk (bottom) scales. The colored blocks indicate the item response category ranges.

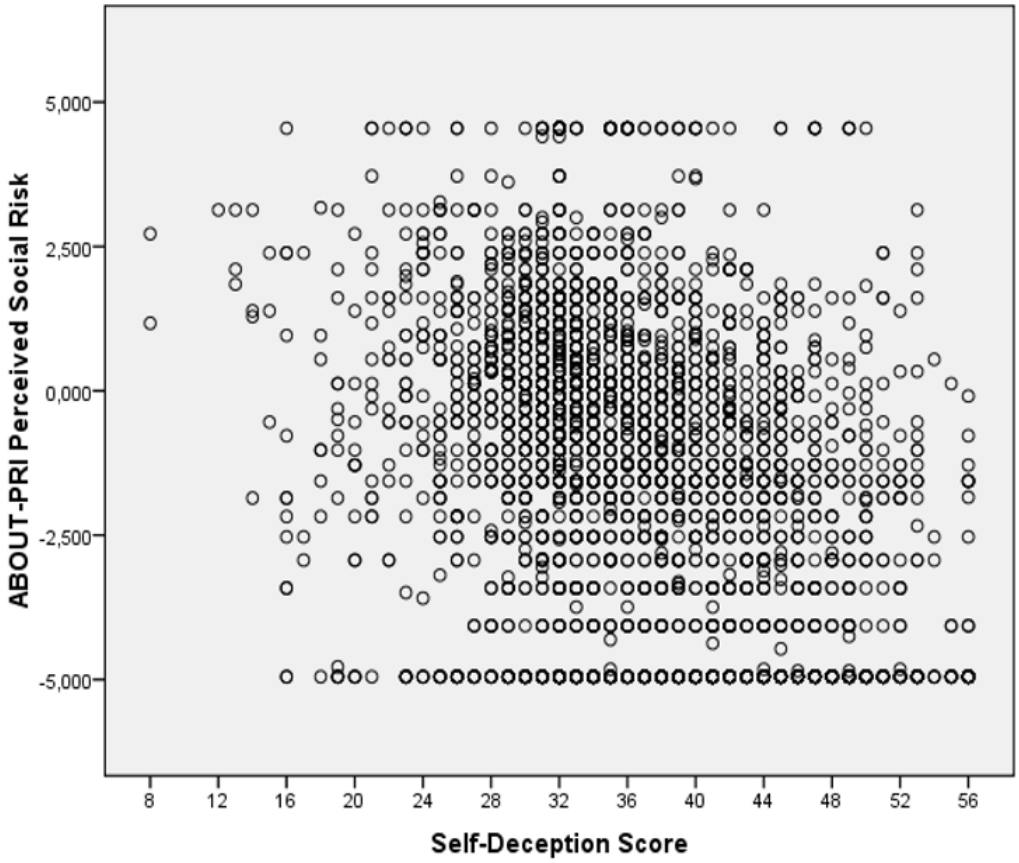

Figure 2 presents the participant scores on the Perceived Social Risk and self-deception scales.

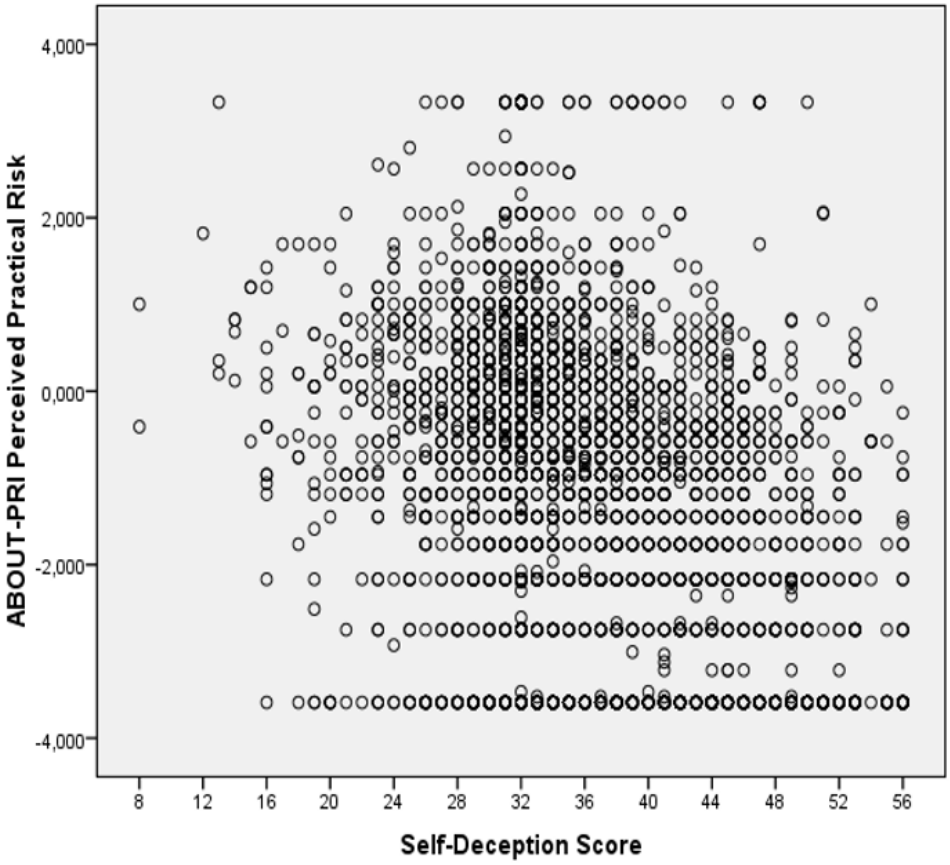

Figure 3 presents the participant scores on the Perceived Practical Risk and self-deception scales

DISCLOSURES

Declaration of interest statement

E.C., E.A., and C.C. are employees of Philip Morris International. S.C. and T.S. are contracted and paid by Philip Morris International.

ABSTRACT

Background. The ABOUT—Perceived Risk is a self-report instrument, developed by Philip Morris Products, designed to assess perceived risks associated with the use of a wide range of tobacco and/or nicotine containing products (TNP), such as cigarettes, e-cigarettes, smokeless tobacco, and heated tobacco products. Its original five-domain conceptual framework (perceived: health risk to self, addiction risk, harm to others, social risk, and practical risk) was developed on the basis of qualitative studies, literature review, and input from experts. Although draft versions of scales to represent each of the five domains were developed and cognitively debriefed, only the Perceived Health Risk and Addiction Risk scales were initially psychometrically validated in two quantitative studies, and “harm to others” was captured by three items to be treated as single item. Here, we describe the subsequent psychometric evaluation of the Perceived Social and Practical Risk scales, using data collected in an independent cross-sectional study in the US among adult TNP users.

Methods. A sample of exclusive TNP and poly-TNP users (n=1250 in each sample) completed the Perceived Social Risk (13 items) and Perceived Practical Risk (9 items) scales in an online survey. Psychometric evaluation was based on Rasch Measurement Theory (RMT) and Classical Test Theory (CTT) analysis.

Results. An item-reduced scale was derived for both Perceived Social Risk (7 items) and Perceived Practical Risk (6 items). The item-reduced Social and Practical Risk scales showed no indication of differential item functioning and exhibited high reliability (Rasch PSI 0.90 and 0.81; Cronbach’s alpha 0.96 and 0.92, respectively), and good stability over time (test–retest reliability, 0.76 and 0.74, respectively).

Conclusions. The psychometric performance of the new Perceived Social Risk and Perceived Practical Risk scales supported the expansion of the ABOUT—Perceived Risk instrument to include better coverage of perceived risk measurement. The instrument will be made available through PROQOLID™.

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