

Linguistic Validation of the Perceived Risk Instrument (PRI) into French, German, Italian, Japanese, Polish and Russian

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Introduction and Objectives

- The Perceived Risk Instrument (PRI) was developed in American and British English to measure and compare the perceived risks associated with the use of tobacco or nicotine-containing products¹. It includes two scales assessing Perceived Health Risk (18 items) and Perceived Addiction Risk (7 items, including one item confined to cessation) of using a tobacco or nicotine-containing product.
 - The Perceived Health Risk scale measures the perceived negative risk (or impact) of product use to the respondent's physical health, going from minor immediate concrete manifestations of health risk (e.g., having poor gum health) to more serious long terms ones (e.g., having lung cancer).
 - The Perceived Addiction Risk scale assesses the perceived negative risk (or impact) that product use may have on the respondent's sense of being addicted to using the product.
- In addition to these two scales, two items related to Perceived Health Risk to Others (i.e., perceived harm to others) are included in the PRI, and are interpreted as single items.
- See **Figure 1** for examples of items.

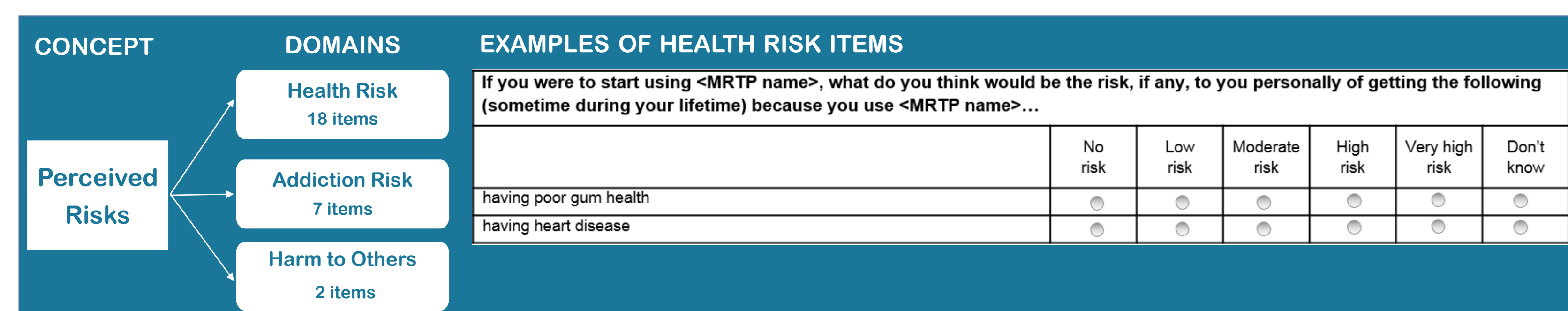


Figure 1. Perceived Risk Instrument (PRI).

- The PRI allows to measure perceived personal risk (PRI-P), i.e., the respondent is asked about the risk of personally getting health issues or being addicted, or to measure perceived general risk (PRI-G), i.e., the respondent is asked about risks in general. While the items remain the same, regardless of the product the instrument is applied to, the sentence stem accommodates the smoking status (current, never or former), and provides the reference to the product to be assessed (including Conventional Cigarettes (CC), Nicotine Replacement Therapy (NRT), or potential Reduced Risk Product (RRP)). A measure specific to smoking cessation (PRI-G Cessation and PRI-P Cessation) uses the same items, except for the Addiction scale (4 items with one specific to anxiety around smokers).
- The objective of this research was to linguistically validate the PRI to other cultures and countries, such as France, Germany, Italy, Japan, Poland and Russia.

Methods

Linguistic Validation Process

- The translation process (i.e., Linguistic Validation²) for the development of the French, Italian, German, Japanese, Polish and Russian versions of the PRI followed the recommendations of the International Society for Pharmacoeconomics and Outcomes Research³. The translations were performed by two different translation service providers (Mapi Language Services and TransPerfect): Japanese and Italian translations were conducted in 2014 by the Linguistic Validation Group at TransPerfect; French and Polish translations in 2015, German translation in 2015 with a revision in 2016, and Russian translation in 2016 were conducted by Mapi Language Services.
- In each country, the process conducted by the two translation service providers consisted of five steps (see Figure 2).

Participants Cognitive Testing

- Participants of the interviews had to be native-speaking residents of the target countries. Subject selection criteria for a sample of six respondents (France, Germany, Poland and Russia) and ten respondents (Italy, Japan) were the following: equal representation of gender, of mixed education (i.e., a minimum of two participants with a maximum of or less than 15 years of education), and an equal mix of smokers (adults who smoked at least 100 cigarettes in their lifetime, and were currently smoking at least one cigarette per day); former smokers (formerly daily adult smokers who quit more than 30 days prior the interview); and never smokers (adults who never smoked or smoked less than 100 cigarettes in their lifetime).

Analysis

- The linguistic validation reports were reviewed to identify difficulties and problematic issues, as well as the solutions proposed to overcome them. The types of difficulties were categorized and quantified as Cultural (C), Idiomatic (I), Semantic (S) or Syntactic (Sy) (see **Table 1** for definitions)⁴⁻⁵.

References

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Methods

Figure 2. Linguistic Validation Process.



Table 1. Categorization of Translation Difficulties.

Category	Definition
Cultural (C)	A word or formulation in the original is culturally loaded in the target context due to societal or religious customs (e.g., eating habits in Asian countries). The usage of certain words or phrases based on the culture of a given society may be improper in the target language. For instance, "starchy foods (e.g., potato, bread, etc.)" become "starchy foods (e.g., rice, pasta, chapatti, etc.)."
Semantic (S)	Semantics concerns meanings, which are both denotative, i.e., the literal word (lexis), and connotative, namely the set of cultural and/or subjective associations implied by a word in addition to its literal explicit meaning. This category includes lexical differences. For instance, English has a slightly larger lexicon than French. Therefore, some French words have no direct equivalent in English and would need the use of paraphrases. For instance, "meet your responsibilities" becomes "meet your duties", or "meet your obligations".
Idiomatic / Pragmatics (I)	The practicalities of how a language is used in its everyday context may be different between the source and target language. For example, one language may have more social registers than another (there are a number of different forms of addressing a person in Japanese, whereas English may only have one) and the idiosyncrasies of one language (repetitions, focus on particular words, use of particular idiomatic expressions, etc.) may not be found in another. For instance, "I feel <u>downhearted and blue</u> " can be translated by an equivalent of "I feel downhearted and <u>sad</u> " or "I feel downhearted and <u>depressed</u> ."
Syntactic / Grammar (Sy)	Syntactic difficulties correspond to specific aspects related to sentence structure, grammar, punctuation. The structure and grammar of the source and target languages may diverge and may impact the identification of conceptually equivalent alternatives in a target language. For instance, the use of a verbal passive form in the original may not be possible in some target languages, where active form is more current.

Results

Participants

- Interviews were conducted in a total of 50 participants. Participants ranged in age from 19 to 72 years, 54% were female, and 90% had 15 or less years of education. 40% were current smokers, 32% former smokers, and 28% never smoked. See **Table 2** for details country by country.

Acceptability of the PRI

- In general, the PRI was well understood. For each item, respondents had no difficulty in choosing their answer. However, some respondents, especially in France, reported that answering to both versions (i.e., PRI-G and PRI-P) was tedious and burdensome.

Results

Table 2. Demographic Characteristics of the Respondents.

Language	N	Age Range in years (mean)	Gender (Males/Females)	Smoking Status			Education in years	
				Current smokers (M/F)	Former Smokers (M/F)	Non Smokers (M/F)	≤ 15 years	> 15 years
French	6	28-62 (50.6)	2/4	2 (1/1)	2 (1/1)	2 (0/2)	6	0
German S1*	6	19-72 (42.3)	2/4	2 (0/2)	2 (1/1)	2 (1/1)	6	0
German S2**	6	19-66 (45.3)	2/4	2 (0/2)	2 (1/1)	2 (1/1)	6	0
Italian	10	40-58 (48.9)	6/4	5 (1/4)	3 (3/0)	2 (2/0)	10	0
Japanese	10	26-69 (44.7)	5/5	5 (3/2)	3 (1/2)	2 (1/1)	7	3
Polish	6	26-65 (43.6)	3/3	2 (1/1)	2 (1/1)	2 (1/1)	6	0
Russian	6	22-65 (40.5)	3/3	2 (2/0)	2 (1/1)	2 (0/2)	4	2
Total	50	19-72 (45.4)	23/27	20 (8/12)	16 (9/7)	14 (6/8)	45	5

*S1: First Sample; **S2: Second Sample

Translation Issues

- Overall, the linguistic validation did not indicate culture-related difficulties, but identified semantic, idiomatic and syntactic concerns (**Table 3**). Japanese was the language which raised most of the concerns, i.e., 17 difficulties, mainly semantic (7), syntactic (5) and idiomatic (5). French, Italian, Polish and Russian were mostly concerned with idiomatic difficulties and German with semantic difficulties.
- The only potential cultural/historical issue that was raised during the whole process into six languages was related to the naming of the instrument when applied to cigarettes (i.e., PRI CC, for the PRI personal risk of using conventional cigarettes). In German, the acronym for "*Konventionelle Zigaretten*" (conventional cigarettes) is KZ. Since this acronym was used by the Nazis for "*Konzentrationslager*" (concentration camp), there was reluctance to use it in the German version of the PRI. For all countries, it was finally decided to keep the programming instructions and questionnaire title in English, thus making the cultural issue non applicable anymore. Besides the aforementioned exception, most of the issues belonged to the idiomatic, semantic or syntactic fields. See examples below:
 - In French, the sentence stem for the Perceived Health Risk scale raised a lot of discussion during the translation and the interviews. The expression "*getting the following*," when literally translated (i.e., "*avoir ce qui suit*"), was found too vague, and absolutely not idiomatic for a native French speaker. Therefore, the translation team had to decide between two options, either use "*to suffer from the following diseases or symptoms*" (i.e., *de souffrir des maladies ou symptômes suivants*) or to use "*to expose oneself to the following consequences*" (i.e., *s'exposer aux conséquences suivantes*). Both options were tested during the cognitive interviews. They were well understood with a slight preference for the first option. As the team argued that the items of the scale were not all related to symptoms or diseases, the second option was retained.
 - In Polish and Russian, the use of "having" at the beginning of 12 items of the Perceived Health Risk scale was found inadequate for idiomatic reasons and deleted.
 - In Italian, the item "losing some sense of taste" in the Perceived Health Risk scale could not be literally translated for idiomatic reasons and an equivalent of "partially losing the sense of taste" was used (i.e., *perdere parzialmente il senso del gusto*).
 - In Japanese, all the Perceived Risk Addiction items had to be structured with a subject (i.e., "they"/"you") and the verbal form at the present tense (i.e., "can't quit").

Table 3. Number of Translation Difficulties per Language.

Languages	Translation Difficulties			
	I	S	Sy	Total
French	4	1	1	6
German	2	4	3	9
Italian	5	2	0	7
Japanese	5	7	5	17
Polish	8	0	0	8
Russian	5	1	1	7

Discussion / Conclusion

- The linguistic validation of the PRI across six languages showed that problematic issues mainly resided in the fields of semantics, idioms and syntax, and led to translations adequately capturing the concepts of the original American English and being reliably applicable to the target countries of France, Germany, Italy, Japan, Poland and Russia. The initial conceptual analysis was crucial to obtaining translations harmonized with each other and reflecting the meaning of the original. The cognitive interviews provided essential input to the development of versions easily understood by the target population, especially in Japan.
- The PRI is now available for use in cross-cultural research on tobacco or nicotine-containing product. This provides opportunities for international initiatives on risk perception research. Furthermore, this research lays the groundwork for the development of questionnaire validation guidelines for the tobacco industry. The PRI is distributed by Mapi Research Trust, handling access, use and further translations (see <https://eprovide.mapi-trust.org/instruments/perceived-risk-instrument>).