

Modified Reasons for Smoking Scale: translation to Portuguese, cross-cultural adaptation for use in Brazil and evaluation of test-retest reliability*

Escala Razões Para Fumar Modificada: tradução e adaptação cultural para o português para uso no Brasil e avaliação da confiabilidade teste-reteste

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Abstract

Objective: To translate the Modified Reasons for Smoking Scale (MRSS) to Portuguese, to submit it to cross-cultural adaptation for use in Brazil and to evaluate the test-retest reliability of the translated version. **Methods:** An English-language version of the MRSS was translated to Portuguese by Brazilian doctors who have thorough knowledge of the English language. A consensus version was produced by a multidisciplinary group including two pulmonologists, a psychiatrist and a psychologist. This version was back-translated to English by an American translator. Cross-cultural adaptation of the final version was evaluated in a sample of 20 healthy smokers. Test-retest reliability was evaluated by applying the translated version of the scale in 54 healthy smokers on two distinct occasions, 15 days apart. **Results:** This translated version of the MRSS was well understood by 95% of the smokers, indicating excellent cross-cultural equivalence. The degree of reliability of the answers in two different occasions was almost perfect for two questions, substantial for ten questions, moderate for eight questions, and low for one question. The intraclass correlation coefficients of the motivational factors obtained on the two different occasions, calculated according to previously published theoretical models, were higher than 0.7 for six of the seven subscales. **Conclusions:** The Portuguese-language version of the MRSS shows satisfactory cross-cultural equivalence and test-retest reliability. It can be a useful tool in the evaluation and treatment of smokers in Brazil.

Keywords: Smoking cessation; Scales; Translations; Validation studies.

Resumo

Objetivo: Traduzir, fazer a adaptação cultural e testar a confiabilidade teste-reteste de uma versão em língua portuguesa da Escala Razões Para Fumar Modificada (ERPFM) para uso no Brasil. **Métodos:** Uma versão em língua inglesa da ERPFM foi traduzida por médicos brasileiros com profundo conhecimento sobre a língua inglesa. Uma versão de consenso foi obtida por grupo multidisciplinar composto por dois pneumologistas, um psiquiatra e um psicólogo. Essa versão foi traduzida de volta ao inglês por um tradutor americano. A avaliação da adaptação cultural da versão final foi efetuada em uma amostra de 20 fumantes saudáveis. A avaliação da confiabilidade teste-reteste foi feita pela aplicação da versão traduzida da escala em 54 fumantes saudáveis em duas ocasiões separadas por 15 dias. **Resultados:** Essa versão traduzida da ERPFM exibiu excelente identidade cultural, sendo bem compreendida por 95% dos fumantes. Os graus de concordância das respostas em duas ocasiões distintas foram quase perfeito para duas questões, substancial para dez questões, moderado para oito questões e discreto para uma questão. Os valores dos coeficientes de correlação intraclasses dos fatores motivacionais em duas ocasiões, empregando-se modelos teóricos previamente publicados, foram superiores a 0,7 em seis dos sete domínios. **Conclusões:** A presente versão da ERPFM exibe identidade cultural e confiabilidade teste-reteste satisfatórias, podendo ser de utilidade no tratamento e na avaliação de tabagistas em nosso meio.

Descritores: Abandono do hábito de fumar; Escalas; Tradução (produto); Estudos de validação.

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Introduction

Smoking-related diseases are currently major causes of morbidity and mortality.⁽¹⁾ Although the harmful effects of smoking are well known, it is notoriously difficult for smokers to quit the habit.⁽²⁾ By all indications, smoking is pleasurable, is habit-forming and causes pharmacological dependence, which makes it difficult to quit.

Nicotine is classified as a psychoactive drug that can strongly influence the biology and physiology of the brain.⁽³⁾ The psychoactive properties of nicotine are central to tobacco dependence. However, tobacco dependence involves certain peculiarities, and the motivations to smoke are varied and multidimensional. Some authors have established a difference between nicotine dependence and tobacco dependence itself.⁽³⁾ According to those authors, the former is just one dimension of the latter. The term “tobacco dependence” refers to the pharmacological dependence on nicotine, as well as to other psychosocial aspects of being a smoker. In this context, the identification and characterization of the various reasons for smoking can aid in establishing individual strategies for smoking cessation.

In 1966, Tomkins described smoking as a way in which individuals control their feelings.⁽⁴⁾ According to the author, the motivational characteristics of the behavior of smokers are as follows: the search for positive affect; the search for relief of negative affect; dependence; and habit. Based on this theoretical model, one group of authors proposed a scale to identify the primary reasons for smoking.⁽⁵⁾ This scale comprised 23 questions and was designated the Reasons for Smoking Scale (RSS). The RSS, either in its original version (23 questions) or, more recently, in its abridged version (18 questions), has been used for decades in North America and is the most popular method of evaluating the psychological reasons for smoking.⁽⁶⁾ This scale has been used in a substantial number of studies related to smoking behavior over the last 50 years and has been cited in over 80 indexed articles.⁽⁶⁾

In one early study,⁽⁷⁾ the RSS was applied in 2,094 adult smokers and, by means of factorial analysis, six motivational factors were defined: stimulation; pleasure/relaxation; sensorimotor manipulation; habit; dependence; and reduction in negative feelings. The authors of that study

noted that if the first three items were regarded as specific instances of the search for positive feelings, the scale would measure exactly the four types of smoking originally proposed by Tomkins. Various authors who have used the RSS have consistently identified the same six motivational factors.⁽⁸⁾

A few years ago, a modification in the RSS was proposed, including new questions in order to cover a seventh motivational domain, i.e., social interaction, which originated from a model previously proposed in the literature.⁽⁹⁾ The new scale, composed of 21 questions, was designated the Modified Reasons for Smoking Scale (MRSS).⁽¹⁰⁾ The psychometric properties of the MRSS were evaluated in a sample composed of 330 French smokers and led to the characterization of seven motivational domains, as follows: dependence; the pleasure of smoking; tension reduction/relaxation; social interaction; stimulation; habit/automatism; and hand-mouth activity. This analysis resulted in the exclusion of 2 questions (due to their low factor loadings), and the final version of the MRSS was composed of 19 items.⁽¹⁰⁾ Therefore, the MRSS scale comprised seven subscales, corresponding to the seven motivational factors described above. The number of questions for each subscale ranges between 2 and 3, and for each question there is an answer that provides a Likert scale score ranging from 1 to 5 points. The scores for the factorial elements are obtained by calculating the means of the individual scores for the questions that constitute the elements. Although the actual clinical usefulness of the MRSS has yet to be determined, high scores for habit/automatism were correlated with high rates of relapse after an anti-smoking intervention for the group of patients involved in the initial study.⁽¹⁰⁾

Considering the importance of the investigation of the motivational factors related to smoking, as well as the fact that none of these instruments is currently available in Portuguese, the purpose of the present study was to translate the MRSS and to submit it to cross-cultural adaptation for use in Brazil. In addition, the degree of reliability of the MRSS was evaluated on two different occasions.

Methods

We used an English-language version of the MRSS, obtained by correspondence with Dr. Irvin

Berlin from the *Centre Hospitalier-Universitaire Pitié-Salpêtrière*, in Paris, France. The MRSS is in the public domain. A multidisciplinary group composed of two pulmonologists, a psychiatrist and a psychologist was formed in order to supervise the process of translation of the questions, of cross-cultural adaptation and of validation of the instrument. In addition to this multidisciplinary group, three bilingual Brazilian physicians who lived in English-speaking countries for over 2 years and an American translator who has lived in Brazil for 8 years collaborated in the process. The MRSS was translated according to the recommended method⁽¹¹⁻¹³⁾:

- translation of the questions from English to Portuguese by three physicians familiar with the subject and fluent in English
- analysis of the three initial translations and production of a consensus version by the multidisciplinary group
- back-translation of the consensus version from Portuguese to English by the American translator
- analysis and approval of the back-translated version by the multidisciplinary group

In all of the stages, the questionnaire was administered by the same researcher.

The evaluation of cross-cultural and semantic equivalence of the translated questions was carried out by administering the translated version of the MRSS to a group of 20 volunteers who were employees of the *Ribeirão Preto Hospital das Clínicas*, in the city of Ribeirão Preto, Brazil. The individuals evaluated smoked a minimum of one cigarette every other day and reported no comorbidities. They were approached at a moment of leisure, at lunchtime, while smoking in a specially-designated area outside the hospital building. The Fagerström test for nicotine dependence was applied in order to evaluate the clinical severity of smoking.⁽¹⁴⁾ The characteristics of this group of volunteers are listed in Table 1.

The test-retest reliability of the translated questions was evaluated in another group of volunteers, composed of 54 employees of the same institution, who were approached under the same circumstances. These individuals completed the final version of the instrument on two different occasions, 15 days apart. The

Table 1 - Clinical characteristics of the volunteers involved in the analysis of cross-cultural equivalence of the Modified Reasons for Smoking Scale.

Variable	Smokers (n = 20)
Gender (male/female), n/n	2/18
Age (years), mean ± SD	43.5 ± 11.0
Time since smoking onset (years), mean ± SD	26.7 ± 8.5
Distribution of volunteers according to the number of cigarettes smoked per day, n (%)	
≤ 10 cigarettes/day	9 (45)
11-20 cigarettes/day	7 (35)
21-30 cigarettes/day	3 (15)
≥ 31 cigarettes/day	1 (5)
Fagerström test score, mean ± SD	4 ± 2.4

characteristics of this second group of volunteers are described in Table 2.

The translated instrument was self-administered. However, a researcher was always available to answer any questions. All of the volunteers were literate. Since the MRSS was developed to be self-administered, inter-rater reliability of the translated questionnaire was not evaluated.

The present study was approved by the Research Ethics Committee of the *Ribeirão Preto Hospital das Clínicas*, Ribeirão Preto, Brazil. All volunteers gave written informed consent. The clinical data of the volunteers are presented as means and standard deviations. The statistical analysis of the test-retest reliability of the answers given on the two different occasions was performed using the weighted kappa

Table 2 - Clinical characteristics of the volunteers involved in the evaluation of the test-retest reliability of the Modified Reasons for Smoking Scale.

Variable	Smokers (n = 54)
Gender (male/female), n/n	19/35
Age (years), mean ± SD	41.3 ± 10.9
Time since smoking onset (years), mean ± SD	23.1 ± 10.5
Distribution of volunteers according to the number of cigarettes smoked per day, n (%)	
≤ 10 cigarettes/day	18 (33.3)
11-20 cigarettes/day	23 (42.6)
21-30 cigarettes/day	10 (18.5)
≥ 31 cigarettes/day	3 (5.5)
Fagerström test score, mean ± SD	4.3 ± 2.7

Chart 1 – Modified Reasons for Smoking Scale translated to Brazilian Portuguese.

1. *Eu fumo cigarros para me manter alerta.*
 2. *Manusear um cigarro é parte do prazer de fumá-lo.*
 3. *Fumar dá prazer e é relaxante.*
 4. *Eu acendo um cigarro quando estou bravo com alguma coisa.*
 5. *Quando meus cigarros acabam, acho isso quase insuportável até eu conseguir outro.*
 6. *Eu fumo cigarros automaticamente sem mesmo me dar conta disso.*
 7. *É mais fácil conversar e me relacionar com outras pessoas quando estou fumando.*
 8. *Eu fumo para me estimular, para me animar.*
 9. *Parte do prazer de fumar um cigarro vem dos passos que eu tomo para acendê-lo.*
 10. *Eu acho os cigarros prazerosos.*
 11. *Quando eu me sinto desconfortável ou chateado com alguma coisa, eu acendo um cigarro.*
 12. *Quando eu não estou fumando um cigarro, eu fico muito atento a isso.*
 13. *Eu acendo um cigarro sem perceber que ainda tenho um outro aceso no cinzeiro.*
 14. *Enquanto estou fumando me sinto mais seguro com outras pessoas.*
 15. *Eu fumo cigarros para me “por para cima”.*
 16. *Quando eu fumo um cigarro, parte do prazer é ver a fumaça que eu solto.*
 17. *Eu desejo um cigarro especialmente quando estou confortável e relaxado.*
 18. *Eu fumo cigarros quando me sinto triste ou quando quero esquecer minhas obrigações ou preocupações.*
 19. *Eu sinto uma vontade enorme de pegar um cigarro se fico um tempo sem fumar.*
 20. *Eu já me peguei com um cigarro na boca sem lembrar de tê-lo colocado lá.*
 21. *Eu fumo muito mais quando estou com outras pessoas.*
- As alternativas e o peso das respostas para cada questão são:*
 () Nunca [1] () Raramente [2] () Às vezes [3] () Frequentemente [4] () Sempre [5]

statistic.⁽¹⁵⁾ The intraclass correlation coefficient (ICC) was used in order to analyze the answers to the 21 MRSS questions, grouped according to the motivational domains, in relation to what is theoretically expected based on the findings of previous studies.⁽¹⁶⁾

Results

The final version of the MRSS, translated to Brazilian Portuguese, is shown in Chart 1.

The results of the analysis of cross-cultural and semantic equivalence were satisfactory, since the questions were understood and deemed applicable by over 95% of the participants.

The test-retest reliability of the Portuguese-language version of the MRSS was considered satisfactory. According to reference points proposed in the literature, the degrees of reliability of the answers on two distinct occasions were classified as almost perfect for 2 questions, substantial for 10 questions, moderate for 8 questions and low for 1 question (Table 3).⁽¹⁷⁾

The degree of test-retest reliability, in terms of the motivational factors identified, calculated according to previously published theoretical models, was also high.⁽⁸⁻¹⁰⁾ The ICC values

obtained were higher than 0.7 for six of the seven subscales, a value that denotes excellent reliability (Table 4).⁽¹⁸⁾

Discussion

The identification of the principal reasons for smoking is a potentially useful tool for the development of anti-smoking interventions at the individual and collective levels. To date, the principal instruments that have been used for this purpose are the RSS and the MRSS. In the present study, we described how an English-language version of the latest scale was translated to Brazilian Portuguese, following all recommended steps in the process. The Portuguese-language version of the MRSS showed excellent cross-cultural equivalence, as well as excellent test-retest reliability, and is available for immediate application in smoking-related studies to be conducted in Brazil. An additional study, aimed at validating the psychometric properties of the Portuguese-language version of the MRSS, is underway.

Various studies have evaluated the validity, applicability and clinical usefulness of the

Table 3 – Kappa values for the 21 questions of the Modified Reasons for Smoking Scale, answered on two different occasions.

Question	Kappa value	Question	Kappa value
1	0.760*	12	0.458*
2	0.662*	13	0.899*
3	0.636*	14	0.801*
4	0.509*	15	0.574*
5	0.762*	16	0.826*
6	0.721*	17	0.336**
7	0.754*	18	0.613*
8	0.537*	19	0.520*
9	0.579*	20	0.742*
10	0.432*	21	0.619*
11	0.580*		

*p < 0.01; and **p = 0.02.

RSS. Such studies have been thoroughly reviewed.^(6,19)

In those studies, the analysis of the psychometric properties of the motivational factors or subscales presented good internal consistency.⁽⁶⁾ The mean scores showed sufficient variability to draw inferences regarding the relative weight of the six motivational factors detected. Temporal reliability, assessed by tests on different occasions, showed equally acceptable results. The analysis of previously published results suggests that, in general, stimulation is the least important factor, whereas dependence is the most important factor.⁽⁶⁾ It is of note that the validity of the psychometric properties of the scale was also demonstrated in the smokers with a history of alcoholism.⁽²⁰⁾

A review article regarding the RSS also analyzed aspects related to the clinical application of the scale in 11 previously published studies

Table 4 – Intraclass correlation coefficient values for the expected model of seven motivational domains.

Motivational factor	Questions	Intraclass correlation coefficient
Dependence	5, 12, 19	0.765
Pleasure of smoking	3, 10, 17	0.593
Tension reduction/relaxation	4, 11, 18	0.802
Social interaction	7, 14, 21	0.815
Stimulation	1, 8, 15	0.763
Habit/automatism	6, 13, 20	0.851
Hand-mouth activity	2, 9, 16	0.865

classified as follows: analogy studies; self-monitoring studies; and treatment studies.⁽¹⁹⁾

The purpose of the analogy studies was to evaluate whether self-reported behavior correctly reflected the behavior of interest in controlled groups. Of the three studies that were reviewed, two provided support for the use of the scale, whereas the best-designed study showed different results.⁽²¹⁻²³⁾

Three self-monitoring studies were evaluated. In the self-monitoring approach, the scores for the subscales are compared with the self-reported data, recorded when each cigarette is smoked. Of the three self-monitoring studies, two failed in demonstrating the usefulness of the scale in that situation, and one study, which was more well designed from a methodological point of view, produced results that were considered satisfactory.^(8,24,25)

Five studies attempted to establish a correlation between the RSS profile and the data obtained during therapeutic interventions for smoking cessation.⁽²⁶⁻³⁰⁾ The methods used and the aspects analyzed differed greatly among these studies, which limits the value of comparisons and the generalization of the results obtained. In this context, two studies showed that the RSS has no clinical utility, whereas three others provided evidence that the scores for the subscales were related to treatment-relevant variables, such as withdrawal symptoms.

In 2003, Berlin et al.⁽¹⁰⁾ proposed that an additional motivational factor, i.e., social interaction, be included in the RSS, thus leading to the creation of the MRSS. The authors applied the MRSS in 330 smokers, which provided a factorial structure that was consistent with the proposal for evaluating seven motivational factors. However, the exclusion of two questions (12 and 21) also significantly improved the internal consistency of the instrument. The authors found that the dependence factor correlated positively with the number of cigarettes smoked per day, whereas the score for the habit/automatism subscale was significantly higher in the group of smokers who smoked more than one pack per day. High levels of nicotine dependence, characterized by scores ≥ 6 on the Fagerström test for nicotine dependence, presented a significant correlation with higher scores for the dependence factor. The logistic regression showed that failed attempts to stop smoking were predicted by

high scores for the habit/automatism subscale and by a greater number of cigarettes smoked per day. Women and men presented different RSS profiles. Women had higher scores for the following factors: tension reduction/relaxation; stimulation; and social interaction.

Therefore, the results reported indicate that the MRSS is an improvement on the RSS, as well as a tool with great potential for clinical use. Further studies involving the MRSS are needed in order to establish more accurately its true usefulness in evaluating smokers. The Portuguese-language version of the scale will allow such investigations to be conducted in Brazil as well.

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References

- Menezes AM. Epidemiologia do tabagismo. *J Bras Pneumol*. 2004;30(Suppl 2):S2-S7.
- Martinez JAB, Salzedas PL, Gorayeb R. Orientações práticas para a interrupção do tabagismo. In: Nobre F, Mion Jr D, editors. *Risco cardiovascular global 3*. São Paulo: Lemos, 2002. p. 139-60.
- Zbikowski SM, Swan GE, McClure JB. Cigarette smoking and nicotine dependence. *Med Clin North Am*. 2004;88(6):1453-65, x.
- Tomkins SS. Psychological model for smoking behavior. *Am J Public Health Nations Health*. 1966;56(12):Suppl 56:17-20.
- Horn D, Waingrow S. Behavior and attitudes questionnaire. Bethesda: National Clearinghouse for Smoking and Health; 1966.
- Tate JC, Schmitz JM, Stanton AL. A critical review of the Reasons for Smoking Scale. *J Subst Abuse*. 1991;3(4):441-55.
- Ikard FF, Green De, Horn D. A scale to differentiate between types of smoking as related to the management of affect. *Int J Addictions*. 1969;4(4):649-59.
- Tate JC, Stanton AL. Assessment of the validity of the Reasons for Smoking scale. *Addict Behav*. 1990;15(2):129-35.
- Russel MAH, Peto J, Patel V. The classification of smoking by factorial structure of motives. *J R Statist Soc*. 1974;137(3):313-46.
- Berlin I, Singleton EG, Pedarriosse AM, Lancrenon S, Rames A, Aubin HJ, et al. The Modified Reasons for Smoking Scale: factorial structure, gender effects and relationship with nicotine dependence and smoking cessation in French smokers. *Addiction*. 2003;98(11):1575-83.
- Pasquali L. Princípios de elaboração de escalas psicológicas. In: Gorenstein C, Andrade LH, Zuardi AW, editors. *Escalas de avaliação clínica em psiquiatria e psicofarmacologia*. São Paulo: Lemos; 2000. p. 15-28.
- Hambleton RK. Translating achievement tests for use in cross-national studies. *Eur J Psychol Assess*. 1993;9(1):57-68.
- Geisinger KF. Cross-cultural normative assessment: translation and psychological and adaptation issues influencing the normative interpretation of assessment instruments. *Psychol Assess*. 1994;6(4):304-12.
- Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström Test for Nicotine Dependence: a revision of the Fagerström Tolerance Questionnaire. *Br J Addict*. 1991;86(9):1119-27.
- Bland JM, Altman DG. Cronbach's alpha. *BMJ*. 1997;314(7080):572.
- Shrout PE, Fleiss JL. Intraclass correlations: uses in assessing rater reliability. *Psychol Bull*. 1979;86(2):420-8.
- Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977;33(1):159-74.
- Bartko JJ. The intraclass correlation coefficient as a measure of reliability. *Psychol Rep*. 1966;19(1):3-11.
- Costa PT Jr, McCrae RR, Bosse R. Smoking motive factors: a review and replication. *Int J Addict*. 1980;15(4):537-49.
- Currie SR. Confirmatory factor analysis of the Reasons for Smoking Scale in alcoholics. *Nicotine Tob Res*. 2004;6(3):465-70.
- Ikard FF, Tomkins S. The experience of affect as a determinant of smoking behavior: a series of validity studies. *J Abnorm Psychol*. 1973;81(2):172-81.
- Leventhal H, Avis N. Pleasure, addiction, and habit: factors in verbal report of factors in smoking behavior? *J Abnorm Psychol*. 1976;85(5):478-88.
- Adesso VJ, Glad WR. A behavioral test of a smoking typology. *Addict Behav*. 1978;3(1):35-8.
- Joffe R, Lowe MR, Fisher EB Jr. A validity test of the reasons for smoking scale. *Addict Behav*. 1981;6(1):41-5.
- Shiffman S, Prange M. Self-reported and self-monitored smoking patterns. *Addict Behav*. 1988;13(2):201-4.
- Flaxman J. Affect-management and habit mechanisms in the modification of smoking behavior. *Addict Behav*. 1979;4(1):39-46.
- Kreitler S, Shahar A, Kreitler H. Cognitive orientation, type of smoker and behavior therapy of smoking. *Br J Med Psychol*. 1976;49(2):167-75.
- Mothersill KJ, McDowell I, Rosser W. Subject characteristics and long term post-program smoking cessation. *Addict Behav*. 1988;13(1):29-36.
- Niaura R, Goldstein MG, Ward KD, Abrams DB. Reasons for smoking and severity of residual nicotine withdrawal symptoms when using nicotine chewing gum. *Br J Addict*. 1989;84(6):681-7.
- O'Connell KA, Shiffman S. Negative affect smoking and smoking relapse. *J Subst Abuse*. 1988;1(1):25-33.

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