

Translation of the MARS questionnaire into Romanian and the linguistic validation of the translated version

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ABSTRACT

The purpose of this study is to describe the translation of the MARS questionnaire into Romanian and the linguistic validation and cultural adaptation of the translated version.

The forward and backward translations of the MARS questionnaire were performed by blinded translators. Following the translation, a panel of specialists chose the final version and performed the necessary cultural adaptations. Although a seemingly simple questionnaire, the translation of MARS into Romanian involved a careful analysis of the items and the cultural adaptation of some in order to be used in the target language. Following the translation, the linguistic validation of the translation was performed in order to make any necessary adjustments for the final version.

This paper presents the translation process of the MARS questionnaire and discusses all the difficulties encountered.

Keywords: linguistic validation, MARS questionnaire, Romanian version of MARS, translation of MARS into Romanian

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The Medication Adherence Rating Scale (MARS) questionnaire was developed in 1999 as a tool to assess the medication compliance in psychiatric patients as a reliable and valid tool for estimating adherence. The impetus for translating this questionnaire into Romanian arose from the need to use it for research in an undergraduate medical student's graduation thesis. Given that the original MARS was not available in Romanian, the translation was essential for effectively including patients whose primary language was Romanian.

The translation process involved a collaborative effort among five translators to ensure accuracy and cultural relevance. The translated version was subsequently reviewed by two professionals in medical English to verify the precision and clarity of the medical terminology. Finally, a specialist in clinical pharmacy approved the translation, ensuring its suitability for clinical and research purposes.

Since no identifiable human subjects were involved in the translation and cultural adaptation of the MARS questionnaire, the authors did not seek the approval of the Ethics Committee of the University. However, the

study conducted for graduation thesis of the student, titled The impact of psychosocial and behavioral factors on adherence to the treatment of patients with cardiovascular disease, received the approval of the Ethics Committee of George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures (no. 2032 of 18.01.2023).

The MARS questionnaire for the psychoses comprises 10 questions and was developed in 1999 by Thomson et al. [1]. It was conducted on a sample of 66 patients, the majority of whom were under the administration of neuroleptics. The reliability of the questionnaire was based on Chronbach's alpha and test-retest reliability, and it was validated with the aid of a multitrait-multimethod matrix. Permission to translate it into Romanian was obtained from the authors via email communication (November 2022).

The preliminary considerations stage, as set forth by Tsang et al. [2], was followed by the development process. Judgemental designs were used in the translation of the questionnaire, forward and backward translations [3]. We did not employ a decentering stage in the translation process [4].

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Table 1. The workflow of the entire translation process of the MARS questionnaire.

Step	Activity	Number of participants
Forward translation	Translation of the questions into Romanian	3
Assessment of translations	Revision of the translations and minor linguistic adjustments	2
Back translation	Back-translation of the questions into English	2
Assessment of translations	Revision of the translations and minor linguistic adjustments	2
Selection of translations and cultural adaptation	Analysis of all translations, selections of the final versions to be included, cultural and linguistic adjustments	2
Content approval	Assurance of the scientific accuracy of the questions	1
Finalising the translated version	Making any necessary final adjustments	3

Table 1 shows the workflow undertaken in order to produce the translation of the questionnaire. The translation process was conducted in December 2022 and involved 9 persons. The whole translation and assessment team was selected by the first author of this study based on their expertise and skills. Unlike the recommendations of the McKown study [5], three forward translators were employed. Five persons were involved in the translation proper of the questionnaire, the forward and backward translations, all of them native speakers of Romanian, and all of them holding a degree in Romanian and English language and literature, and doctoral degrees in one of the two languages in either literature or linguistics. All of the translators were academics. Moreover, some of them were involved in teaching literary translation in the language pair or were teachers of medical English. All five translators were blinded to the versions of the others and to the scope of the process, and all of them worked individually, unlike the Hammond study which used both informed and uninformed translators [6]. The reason to blind the translators was meant to avoid any misconception, compromise or biases during the translation process [7]. No machine translation was employed, the translators were strictly instructed to perform all translations manually. If there were only five translators involved, it is because the questionnaire itself comprises only ten questions in, practically, plain language, as such, we did not see it necessary to employ a larger body of translators.

In the first stage, the translation of the original version was assigned to two translators. Their translations were collected within a few days. After their work was submitted, the back-translation stage was initiated and the Romanian version was assigned to two other translators who were unaware of the fact that the version was a translation and not an original. Following their submission of the back translated versions, the third stage was started with one other blinded translator whose task was to translate the questionnaire into Romanian. After the completion of these three steps, a panel of two academics, both of whom deal with and teach medical translations and both hold a doctoral degree in English linguistics, compared the translated versions to the original

and selected the final questions slightly adapting a few of them. A panel approach was opted for in order to reach a greater balance and non-biased decision-making regarding the translation versions. Subsequently, the translated versions were subjected to the scrutiny of a bilingual specialist in clinical pharmacology with an experience of over 20 years.

The adjustments made by the panel of experts during the assessment stage viewed corrections or changes to verb tenses, changes in the sequence of main clause – sub-clause, substitution of some adjectives, introduction of gender markers in the case of adjectives, changes in word order in the case of time markers, replacement of some phrases with one-word synonyms, and a final assurance of linguistic and cultural equivalence [8].

The original questions of the MARS questionnaire, the three versions of the forward translation, the two back-translation versions and the final questions in Romanian, which were linguistically validated at a later stage, are presented in Table 2.

Fifty-seven respondents, whose primary language was Romanian, filled out the questionnaire. Of these, 24 were male (42.1%) and 33 were female (57.91%). No personal identifiers of the respondents' were stored.

Although few items posed any remarkable difficulties in terms of semantic equivalence, ambiguity or the necessity for cultural adaptation, some of the final translation processes, and intermediate and final versions needed careful consideration. In the case of question 1, if one of the translations employed a past tense choice, the panel decided to preserve the present tense of the original English version. Since the time marker in Romanian does not always have a fixed position, some of the translators placed it at the end of the clause, however, in the final check stage the panel shifted it into position to modify the verb.

In the case of question 3, although some translators opted for a conditional clause, the final decision of the panel was to preserve the time clause in the translated version. This same question had as many versions as translators. The choice of one of our translators was to substitute the plain "stop taking" with the more formal

Table 2. The original, translations, and final versions of the MARS questionnaire

Question	Forward translation 1	Forward translation 2	Forward translation 3	Back-translation of forward translation 1	Back-translation of forward translation 2	Final version
Do you ever forget to take your medication?	Ați uitat vreodată să vă luați medicamentele?	Uitați vreodată să vă luați medicamentele ?	Vi se întâmplă să uitați să vă luați medicamentele?	Have you ever forgotten to take your medication?	Do you ever forget to take your medication?	Uitați vreodată să vă luați medicamentele?
Are you careless at times about taking your medication?	Ocazional, uitați să vă luați medicamentele?	Sunteți neglijent uneori în ceea ce privește luarea medicamentelor?	Sunteți neglijent(ă) uneori în ceea ce privește luarea medicamentelor?	Do you occasionally forget to take your medication?	Are you sometimes careless about taking your medication?	Sunteți neglijent(ă) uneori în ceea ce privește luarea medicamentelor?
When you feel better, do you sometimes stop taking your medication?	Continuați administrarea medicamentelor chiar dacă starea dumneavoastră de sănătate s-a îmbunătățit?	Când vă simțiți bine, câteodată încetați să vă mai luați medicamentele?	Renunțați uneori să vă luați medicamentele când vă simțiți mai bine?	Do you continue to take your medication even though your health has improved?	When you feel well, do you sometimes stop taking your drugs?	Renunțați uneori să vă luați medicamentele când vă simțiți mai bine?
Sometimes if you feel worse when you take the medication, do you stop taking it?	Renunțați, uneori, să vă luați medicamentele dacă începeți să vă simțiți mai rău în timp ce le utilizați?	Uneori dacă vă simțiți mai rău când vă luați medicamente, încetați să le mai luați?	Renunțați la medicamente dacă uneori vă simțiți mai rău după ce le luați?	Do you sometimes stop taking your medication if you start to feel worse while using it?	Sometimes, if you feel worse after taking your medicine, do you stop taking it?	Uneori dacă vă simțiți mai rău când vă luați medicamente, încetați să le mai luați?
I take my medication only when I am sick.	Îmi iau medicamentele doar atunci când sunt bolnav.	Îmi iau medicamentele doar când mă simt rău.	Iau medicamente doar când sunt bolnav(ă).	I only take my medication when I am ill.	I only take my medicine when I don't feel well.	Îmi iau medicamentele doar când mă simt rău.
It is unnatural for my mind and body to be controlled by medication.	Este nefiresc ca mintea și corpul meu să fie controlate de medicamente.	Nu e normal ca mintea și corpul meu să fie controlate de medicamente.	Este nefiresc ca mintea și corpul meu să fie controlate de medicație.	It is unnatural for my mind and body to be controlled by drugs.	It is not normal/ natural for my mind and body to be controlled by drugs.	Este nefiresc ca mintea și corpul meu să fie controlate de medicamente.
My thoughts are clearer on medication.	Gândesc mai clar atunci când îmi iau medicamentele.	Judecata mea e mai clară atunci când iau medicamentele.	Gândesc mai clar când iau medicamente.	I think more clearly when I take my medication.	My reasoning is clearer when I take the drugs.	Gândesc mai clar când iau medicamente.
By staying on medication, I can prevent getting sick.	Pot evita să mă îmbolnăvesc dacă continui să-mi iau medicamentele.	Dacă iau medicamentele pot să previn îmbolnăvirea.	Continuând să iau medicamente, pot preveni îmbolnăvirea.	I can avoid getting sick if I keep taking my medication.	If I take the drugs, I can prevent the disease.	Continuând să iau medicamente, pot preveni îmbolnăvirea.
I feel weird, like a 'zombie' on medication.	Mă simt ca un „zombie” atunci când iau medicamente.	Mă simt ciudat, fără puteri când iau medicamentele.	Mă simt ciudat când iau medicamente, parcă aș fi un „zombi”.	I feel like a “zombie” when I take medicines.	I feel strange and sluggish/ weak/ lethargic after I take the drugs.	Mă simt ciudat când iau medicamente, parcă aș fi un „zombi”.
Medication makes me feel tired and sluggish.	Medicamentele mă fac să mă simt obosit și fără putere.	Medicamentele mă fac să mă simt obosit și fără vlagă.	Medicamentele mă fac să mă simt obosit(ă) și fără vlagă.	Medicines make me feel tired and powerless.	Drugs make me feel tired and thirsty.	Medicamentele mă fac să mă simt obosit(ă) și fără vlagă.

“continuați administrarea medicamentelor” (i.e. continue taking the medication). Moreover, the panel decided to reject the use of an “even if” phrasing in the question, opting for the preservation of the time clause. As a result, the back translation of this question was significantly different from the original.

In a similar manner, question 4 implied adjustments and reconciliation because of the conditional subclause and the time marker. There were just as many versions as translators, finally, the above-mentioned version was decided upon. Because Romanian language has a tendency to avoid repetitions, in the sequence of questions

3 and 4 the panel decided to use different verbs, namely a renunța (i.e., give up) and a înceta (i.e., to stop, to give up).

In question number 7, the impersonal subject of the original was converted into a first person pronoun in order to emphasise the importance of the subject. A conversion from a non-finite clause into a sub-clause was decided upon in question 8 and it was placed in initial/ thematic position in the sentence, thus preserving the original version.

Particular attention was paid to question 9 in which the final decision to keep the term *zombie* was made due to the fact that the word had entered the Romanian language (and dictionaries) a few years before and it had become a widespread word, supposedly under the influence of social media and films.

The panel also considered the employment of the word “drogat” (i.e. high, under the influence of drugs, someone who has consumed illicit substances and is under their influence). However, our decision was not to use it due to the context so as to avoid the misconception that medication may give someone the feeling of having consumed illicit substances (<https://dexonline.ro/definitie/zombi>). In a rough English translation this would have become “I feel high when I take my medication”, while the Romanian version would have become “mă simt ciudat când iau medicamente, parcă aș fi drogat(ă).”

While Romanian language does possess a word with a similar meaning, that of *strigoi*, to stand for the soul of a deceased person which causes disturbance, since it is rather archaic, we opted for the *zombie* borrowing and neologism. Had *strigoi* not been archaic and under the influence of so many Transylvanian legends related to ghost and spirits, such as Bram Stoker’s *Dracula*, we would have used it in favour of the borrowing. Although no translator made use of the word, the panel discussed the possibility of employing it, but decided to preserve the borrowing more so because the Romanian *zombi* also carries the meaning of somebody who has consumed illicit substances. The decision of the panel to keep the term was strengthened by press releases in recent years related to the use of so-called “zombie drugs” in Romania. Videos and reports surfaced on the dangers of the synthetic “zombie” drug according to which it could raise blood pressure, lead to paroxysmal rhythm disorders, respiratory, liver, and kidney failure (<https://www.digi24.ro/stiri/actualitate/social/drogurile-zombie-pot-da-efecte-neuropsihice-cutremuratoare-medic-sinucideri-si-crime-pot-avea-loc-sub-influenta-acestor-substante-1010973>). Nevertheless, a consensus to preserve the quotation marks of the original was reached in order to elicit in the mind of the reader/ interviewee the significance of the feeling in case medication is administered with a view to the accuracy of the

answer of the respondent. Obviously, Romanian spelling was used for the *zombi* term.

As far as the ten items of the questionnaire are concerned, there were no conversions from affirmative into interrogative or vice-versa, all forms of the original were kept in the translated version.

Prior to the linguistic validation step, the five translators were informed about the final version of the translated questionnaire and all of them approved of it, as such no further alterations or changes were made to it. The linguistic validation stage, in the form of cognitive debriefing as described by Wild et al. [9], was conducted on a sample of patients who had completed the questionnaire by the use of the probe technique described by Guillemin [10]. This stage involved 57 patients who completed the questionnaire and were interviewed afterwards by a senior physician using additional rephrased direct and indirect questions in order to verify the patients’ understanding and to ensure that their answers were the ones they had intended to give in the questionnaire. During the linguistic validation process, no identifiable personal details were collected. No problems were identified or reported by the senior physician, as such, no need for alterations of any type occurred. Thus, we consider the current version of the MARS translation the linguistically validated one which can be used by any person or entity needing it in the Romanian language.

Although seemingly a simple questionnaire, the translation of the Medical Adherence Rating Scale (MARS) into Romanian posed some difficulty due to the wide differences between the source English language and the target one. The translation of MARS underwent several stages, including the recommended forward and back translations, as well as a quality check and final approval of the translated version.

However, a limitation of our study that we could consider is the small number of subjects who were interviewed after completing the Romanian version of the questionnaire. Nevertheless, we believe that it is unlikely that a larger pilot group would have encountered misunderstandings or required further clarifications or explanations.

Another limitation of our study would be the fact that the translated and linguistically validated version was not subjected to a psychometric evaluation process. Conducting a full psychometric validation, which includes assessments of reliability, validity, and other psychometric properties, requires extensive testing with a larger and more diverse sample, which was beyond the scope of our current study. Nevertheless, future research could address this issue.

Permission to use the Romanian version of the MARS questionnaire is granted to any professionals interested only with the correct citation of this paper and of the original.

ABBREVIATIONS

MARS- Medication Adherence Rating Scale

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AUTHORS' CONTRIBUTION

AN – design, conception, data analysis, and writing.

EC – literature search, the linguistic validation process.

AP – design, conception, data analysis, and writing.

All authors have read and agreed to the published version of the manuscript.

CONFLICT OF INTEREST

None to declare.

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