

Original article

**A Brazilian version of the MTA-SNAP-IV for evaluation of symptoms of attention-deficit/hyperactivity disorder and oppositional-defiant disorder**

Paulo Mattos\*

Maria Antonia Serra-Pinheiro\*\*

Luis Augusto Rohde\*\*\*

Diana Pinto\*\*\*\*

Group of Studies on Attention Deficit, Instituto de Psiquiatria, Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, RJ, Brazil. Program of Attention Deficit and Hyperactivity, Hospital de Clínicas de Porto Alegre (HCPA), Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil.

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\* Psychiatrist. Associate professor, UFRJ, Rio de Janeiro, RJ, Brazil.

\*\* Psychiatrist. PhD student in Psychiatry, UFRJ, Rio de Janeiro, RJ, Brazil.

\*\*\* Psychiatrist. Associate professor, UFRGS, Porto Alegre, RS, Brazil.

\*\*\*\* Linguist. Associate professor, Universidade Federal do Estado do Rio de Janeiro (UNIRIO), Rio de Janeiro, RJ, Brazil.

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## INTRODUCTION

The attention-deficit/hyperactivity disorder (ADHD) is a common condition that affects about 5% of the population of children and adolescents.<sup>1</sup> It has already been associated with academic problems,<sup>2</sup> use of psychoactive substances<sup>3</sup> and excessive absences from school.<sup>4</sup> The oppositional-defiant disorder (ODD) is also frequent in children and adolescents and increases the risk of having antisocial behaviors. The prevalence and possible complications of those disorders stress the importance of having instruments to provide better knowledge about ADHD and ODD in Brazil.

The American Psychiatric Association has been using in all its Diagnostic and Statistical Manuals of Mental Disorders (DSM), since the early 1980's (DSM-III, 1980;<sup>5</sup> DSM-III-R,<sup>6</sup> 1987; and DSM-IV,<sup>7</sup> 1994), symptoms of inattention, hyperactivity and impulsivity as elements characterizing a diagnosis of ADHD. The current criteria defined by the DSM-IV comprehend nine symptoms of inattention, six of hyperactivity and three of impulsivity. The last two categories are part of a single domain (hyperactivity/impulsivity). The ODD, according to the DSM system, is defined by eight symptoms of hostile and defiant behavior and often occurs as a comorbid condition of ADHD.<sup>8</sup>

Over the past decades, the growing need of standardizing diagnostic criteria, at clinics and in research, in psychiatry and in mental health, made assessment instruments essential for both areas. There are many questionnaires using the DSM-IV criteria that are used for screening, evaluation of severity and frequency of symptoms and treatment follow-up, and may be answered by parents and/or professors. Among them, the following stand out: ADHD Rating Scale,<sup>9</sup> Conners' Questionnaire<sup>10</sup> and SNAP-III<sup>11</sup> and IV.<sup>12</sup> All those questionnaires have the use of quantitative scores (also called qualifiers) in common, i.e., severity scores for each symptom listed, instead of simply recording the presence of symptoms. In general, when a 4-point scale is used, the average obtained for the general population is between zero (not at all, rarely) and 1 (just a little).

The SNAP-IV is a public domain questionnaire, succeeding the SNAP-III and SNAP-IIIR, which were developed based on the third edition of the DSM and its review, respectively. They all use a four-level scale of severity.<sup>13,14</sup> The MTA-SNAP-IV<sup>15</sup> was the version used in the Multimodality Treatment Study, which includes the 26 items corresponding to the criterion A of the DSM-IV for ADHD and to the symptoms of ODD, excluding other items present in previous versions. The MTA-SNAP-IV is sensitive to the effects of different treatments,<sup>13</sup> and it has been translated into several languages, such as Spanish, German, French and Italian. Rules for school populations, using the SNAP-IV in the USA, have already been established,<sup>16</sup> and their psychometric properties are considered solid.<sup>17</sup> The development of rules for the Brazilian population may be of great importance for research, as well as for use in clinical practice.

The validity of clinical or epidemiological trials depends on the validity of information obtained from standardized instruments. The application of instruments in cultures different from those to which they were created is often pointed as a complex task: many authors have systematically stressed the influence of sociocultural aspects related to the expression and interpretation of symptoms.<sup>18</sup> The lack of **cross-cultural equivalence** leads to problems in validating the collected information.<sup>19</sup> In Brazil, there has been growing concern about the systematization of translation of instruments used in research, the incremental use of semantic equivalence verification and the evaluation of a series of instruments in the target population.<sup>20-24</sup> There is still no consensus in relation to the best system to be used in the presentation of an instrument with cross-cultural equivalence. However, many authors propose to perform translation, back translation, analysis of versions by specialists, pretest in the target population (debriefing) and reevaluation based on the pretest.

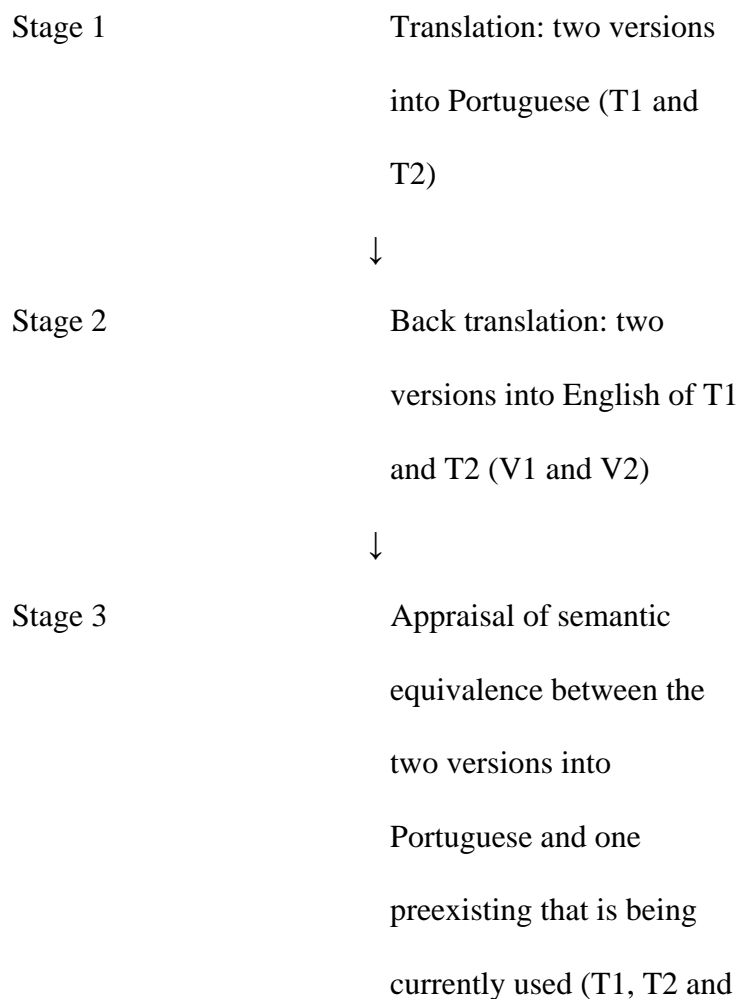
## OBJECTIVES

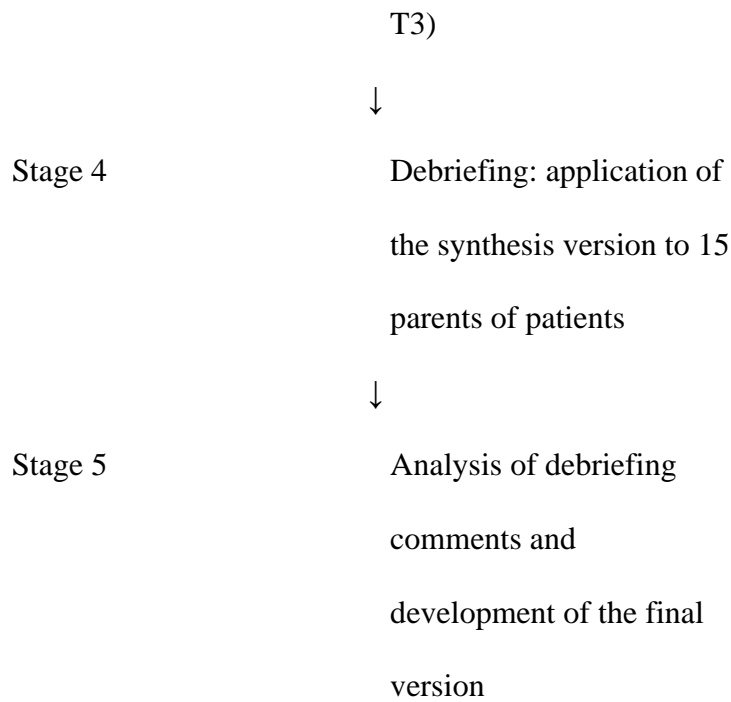
To develop a version to be used in Portuguese of the SNAP-IV scale, using a methodology of translation, back translation, analysis of semantic equivalence and debriefing in the target population.

## METHOD

Five consecutive stages were performed (figure 1): 1) translation of the original instrument; 2) back translation; 3) formal appraisal of equivalence with development of a preliminary version of the instrument; 4) debriefing with a sample of the target population; and 5) final critique by specialists.

**Figure 1 - Stage flowchart.**





- Stage 1 consisted of two translations of the original instrument in English into Portuguese (T1 and T2), which were independently performed: the first one (T1), by a professional graduated from letters and specialized in English, and the second one (T2) by a psychiatrist experienced in ADHD and fluent in English.

- Stage 2 consisted of the back translations of T1 and T2 into English (V1 and V2, respectively) by two professionals graduated from letters and specialized in English. Back translations were performed independently and blindly regarding the profile of the professionals in the first stage.

- Stage 3 consisted of the formal appraisal of **semantic equivalence** and development of a version to be tested, including professionals who were not involved in stages 1 and 2. In this stage, a previously existing version was also used, T3, which is already in use in Brazil by a team of researchers. To evaluate **semantic equivalence**, general and referential meanings of the terms and expressions of all 26 items of the scale were evaluated, besides the five items corresponding to the statement and qualifiers. **Referential meanings** are about the literal correspondence between the words in the original instrument and in back translations. Literal correspondence does not

necessarily imply that the same reaction, understanding or scope of meaning are identical in different cultures, such as the American and the Brazilian. **General meanings** represent the ideas (concepts) to which a single word or set of words allude to, considering the effect that the items have in both cultures. Correspondence, in this case, goes beyond the literality of terms used, comprehending other aspects that may influence the interpretation of the target population. In this stage, the discussion involved the investigation of general and literal meanings with the aid of dictionaries and specialized texts. The back translation technique is usually pointed as the first step for a cross-cultural adaptation<sup>22</sup> of diagnostic instruments and is based on the notion of **literality**. However, it is not possible<sup>26</sup> to recommend a translation that does not consider the context of statement reception and the possible receptors (in this case, parents and teachers), noting the communicative function of what is being read or spoken. Aspects related to the pertinence and acceptability of style, level of words and linguistic forms in population layers with different schooling levels – besides, in countries with continental dimensions such as Brazil, aspects related to regional differences – should be considered by any translation. A form in which the translations and back translations were judged in three levels was used: **similar, approximate and different**. After group evaluation and discussion, a synthesis version was developed.

- Stage 4 (debriefing) consisted of the application of the synthesis version to a convenience sample composed of parents of 15 children and adolescents of both genders, being evaluated or treated by the Group of Studies in Attention Deficit (GEDA) at Instituto de Psiquiatria, UFRJ (RJ, Brazil). The socioeconomic profile of the population that seeks treatment at GEDA indicates that most families belong to classes B and C, according to the classification of the Brazilian Institute of Geography and Statistics (IBGE). In this stage, interviewees were required to give an example of a behavior corresponding to the item they had just answered; the interviewer then judged their understanding based on the pertinence of the example, recording his comments for each item.

- Stage 5 consisted of the collection of comments by those who applied the synthesis versions and their analysis. The final version was then developed.

## RESULTS

Both back translations of the instrument had variable measures of equivalence referential and general meaning in relation to the original instrument, which was discussed and solved in stage 3. The concordance between translations T1, T2 and back translations V1 and V2 varied for the 26 items (nine about inattention, six about hyperactivity, three about impulsivity, eight about oppositional behavior, one about statement and four about qualifiers). Most items were considered “similar” or “approximate,” although some were considered “different.” Table 1 shows the summary of semantic equivalence evaluation according to questionnaire segment, after the stages of translation and back translation. In stage 3, the version T3, previously existing, was also used for comparison, choosing a fourth alternative in some items, with changes aiming at maintaining the **sense** intended by the original instrument in English. Terms that could be understood by individuals in a wider range of schooling level were also chosen. A correspondence of **perception** and **impact** of the terms was sought. Stages 4 and 5 contributed for a better perception of the scale applicability.

**Table 1** - Comparison of translation and back translation pairs (T1-V1 and T2-V2) and final version and translations T1, T2 and T3. The items are considered **similar** when at least one of the translations is similar; **approximate** when one of the translations is approximate, and the other is not; and **different** when any translation is approximate or similar.

<b>T1-V1 and T2-V2</b>				
<b>Items</b>	<b>Equal</b>	<b>Approximate</b>	<b>Different</b>	<b>Items of the final version different from the three translations</b>
Statement and qualifiers	3	0	2	1
Inattention	6	2	1	2
Hyperactivity/impulsivity	5	3	1	5
Opposition and defiant	6	1	1	1
Total	20	6	5	7

Next are some considerations about the decisive processes of the most problematic items:

*Statement and qualifiers segment*

This questionnaire segment presented significant difficulties. There were two items whose back translations were considered different from the original: the qualifiers: *pretty much* and *very much*. *Pretty much* received the same translation in both versions and, although the difference from back translations to the original has been noted, “bastante” was considered the best option. *Very much* does not necessarily indicate frequency (therefore, restricting the expression “quase sempre” [almost always]) and suggests something beyond normal (which is not suggested by “muito”); the choice was “demais,” although the difference between this expression and the original has been noted. Curiously, although the DSM-IV criteria allude to the **behavior frequency**, all existing versions of SNAP use qualifier of **behavior intensity**. During stage 4, the parents distinguished



“pouco” [a little] (existing in version T3 and in one translation) from “só um pouco” [just a little] when questioned by the interviewers about the qualifiers, and the last version was chosen, which was the most correspondent to the original. The statement and one of the qualifiers (*not at all*) did not generate great difficulties.

#### *Inattention items segment*

a) “Deixa de prestar atenção” and “não presta atenção,” translations suggested for item 1, do not correctly translate the sense of failure in giving attention intended by the original (*fails to give attention*); for that reason, we opted for “não **consegue** prestar atenção.” This was the only item in this segment in which any of the back translations approximated the original.

#### *Hyperactivity/impulsivity items segment*

a) In item 11, the expression “abandonar o assento” [abandon the seat] in one of the translations might suggest that the child does not return, which is not necessarily the case. “Levantar-se” [get up], suggested by another translation, does not necessarily imply leaving the designated place. We chose “sair” [leave]. “Assento” [seat] did not seem like an adequate term, since it might not be understood by some people. “Cadeira” [chair], on the other hand, has a specific meaning and cannot be adapted to refer to “carteiras” [desks] or “mesas” [tables], which are more used in our country. We chose “lugar” [place] in stage 3.

b) In item 12: the term “trepar” [climb] seems to be restricted to some regions in the country; for that reason, it was replaced. In fact, the version T3, widely used in Southern Brazil, did not use this term. *Runs about* seems to best indicate “correr de um lado para outro” than “correr a esmo” (which would not be understood by some, besides suggesting another type of situation) or simply “correr,” which does not correctly translate the intention of the original when used alone.

c) In item 13: the sense of *quietly*, in English, does not mean only to be “em silêncio” [in silence], as in T1 and T3, but also “de forma calma” [in a calm manner], aspect contemplated only

in T2. We chose the latter expression, even if it does not involve the sense of “estar em silêncio” [being in silence]. In fact, the term “inquietação” [restlessness] in Portuguese does not necessarily involve the idea of noise.

d) In item 14: the expression “a mil por hora” [on a rush] was considered better than the expressions “elétrico” [electric] or “movido a pilha” [battery-driven], because it is more representative from the sociolinguistic point of view in our country.

#### *Oppositional behavior items segment*

The first item was hard to translate, being different in both back translations in relation to the original. It was concluded that “descontrola-se” [lose control] corresponds to the item of the original version in English.

In the debriefing stage, it was noted that, in item 22, parents did not always properly value the term “de propósito” [on purpose], mentioning, as examples, behaviors that bothered other people, characteristics of ADHD, but not necessarily performed deliberately. It is possible that the term “deliberadamente” [deliberately], a more literal correspondent of the original term in English, reinforces more markedly the aspect of intentionality, but it was concluded that it would be difficult to understand it by a significant part of the population. The debriefing stage also showed that behaviors mentioned in item 25 were sometimes similar to behaviors mentioned in item 26; for some, there was no clear difference between the terms “raivoso ou ressentido” [angry or resentful], in item 25 and the term “vingativo” [vengeful] in item 26. However, such difficulty does not seem specific of the translation or adaptation to our culture.

The final version of SNAP-IV is presented in appendix 1.

## DISCUSSION

There is great need of specific screening for ADHD in children and adolescents. The system of translations of instruments to different languages and cultures has been widely discussed.

Herdman et al.<sup>17</sup> propose a new working process, which starts by the appraisal of **conceptual equivalence** and also evaluates, besides **semantic** equivalence, **item**, **operational** and **measurement equivalences**, to finally determine **functional equivalence**. Perneger et al.<sup>27</sup> investigated the characteristics of both versions of quality of life instruments translated using different methods. They concluded that the version obtained by an exhausting process, including focal groups and multiple pretests (among other cares), presented the same psychometric characteristics of a more moderate method, using some translations, development of synthesis version and two pretests. Although the equivalence of psychometric qualities does not necessarily correspond to the functional equivalence of the scale, it is possible that a less elaborated process does not compromise the quality of the final instrument. Concerns related to the formal appraisal of conceptual equivalence seem to be less needed in our instrument, when compared with quality of life scales (studied by Herdman & Perneger). Quality of life is a very subjective concept subject to variations in different cultures. Much evidence, on the other hand, suggests that ADHD is a construct with cross-cultural validity, when criteria similar to those employed in this questionnaire are used in its definition.<sup>28</sup>

The translation of a scale requires linguistic cares, since terms may have different meanings, specificities and connotations, inherent to each language or culture. The use of a more detailed system for a formal appraisal of semantic equivalence and further definition of a version into Portuguese was essential to identify imperfections in different translations. The importance of searching for equivalence between the foreign language version and Portuguese has been increasingly more accepted, and the number of studies that, in different areas, search for the creation of instruments taking this concern into consideration has been growing. The present study of developing a version into Portuguese identified variable equivalence levels between the original in English and the back translations initially proposed, which suggests the importance of taking care in the development of the synthesis version, including analysis by experts, both from the linguistic point of view and understanding of the construct to be measured by the questionnaire. The stages

used in the present study, especially the group discussion in the stage of semantic equivalence evaluation and development of a preliminary version in Portuguese, proved to be very important for refining a new version in Portuguese. It is suggested that they might be used in other similar studies.

The findings presented here should be received with some restrictions. One limitation of the study is the debriefing in a reduced number of parents. In addition, the semantic equivalence of the instrument was evaluated, but other forms of equivalence were not verified. We have reasons to believe that, with regard to ADHD, **conceptual equivalence and probably item equivalence** were respected, based on the large number of studies using these items that were similar to the results obtained in other cultures.<sup>25</sup> Regarding ADHD, therefore, it does not seem to us that the absence of such analyses would compromise the final version. In relation to ODD, verifying conceptual equivalence would be useful. Verifying **operational equivalences** (for example, the equivalence of administering a self-reporting questionnaire in two cultures with different illiteracy levels) and **psychometric characteristics** would certainly contribute to the establishment of version equivalence in different cultures. This study proposes a new version into Portuguese of the instrument MTA-SNAP-IV, chosen after careful considerations and some applications to the target population. The development and definition of this version are the first step to have validation studies of this Portuguese version.

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#### *ABSTRACT*

*The SNAP-IV questionnaire was developed to evaluate symptoms of attention-deficit/hyperactivity disorder in children and adolescents. It can be fulfilled by parents or teachers and consists of the symptoms listed in the Diagnostic and Statistical Manual of Mental Disorders*

*(DSM-IV) for attention-deficit/hyperactivity disorder (criterion A) and oppositional-defiant disorder.*

*Objectives: To develop a version of the SNAP-IV used in the Multimodal Treatment Assessment Study to be applied in Brazil.*

*Methods: Translation, back-translation, evaluation of semantic equivalence, debriefing and definition of a final version was the methodology used to reach an adequate version.*

*Results: After translation and back-translation, 20 items were considered similar, six items were considered approximate in meaning, and five items were considered different from the original instrument in English. The final version was chosen considering many aspects, including similarity to the original version, ease of understanding and level of equivalence of the terms in different regions of the country.*

*Conclusion: The Portuguese version of the SNAP-IV will allow the screening of attention-deficit/hyperactivity disorder and oppositional-defiant disorder in a similar manner to the original version.*

*Keywords: Attention-deficit/hyperactivity disorder, questionnaires, translation (process), translation (product).*

*Title: A Brazilian version of the MTA-SNAP-IV for evaluation of symptoms of attention-deficit/hyperactivity disorder and oppositional-defiant disorder*

**Correspondence:**

Paulo Mattos

Rua Paulo Barreto, 901

CEP 22280-010 – Rio de Janeiro, RJ, Brazil

E-mail: paulomattos@ufrj.br



## Appendix 1 - Final version of MTA-SNAP-IV

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	Nem um pouco	Só um pouco	Bastante	Demais
1. Não consegue prestar muita atenção a detalhes ou comete erros por descuido nos trabalhos da escola ou tarefas				
2. Tem dificuldade de manter a atenção em tarefas ou atividades de lazer				
3. Parece não estar ouvindo quando se fala diretamente com ele				
4. Não segue instruções até o fim e não termina deveres da escola, tarefas ou obrigações				
5. Tem dificuldade para organizar tarefas e atividades				
6. Evita, não gosta ou se envolve contra a vontade em tarefas que exigem esforço mental prolongado				
7. Perde coisas necessárias para atividades (por exemplo: brinquedos, deveres da escola, lápis ou livros)				
8. Distrai-se com estímulos externos				
9. É esquecido em atividades do dia-a-dia				

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10. Mexe com as mãos ou os pés ou se remexe na cadeira
  11. Sai do lugar na sala de aula ou em outras situações em que se espera que fique sentado
  12. Corre de um lado para outro ou sobe demais nas coisas em situações em que isto é inapropriado
  13. Tem dificuldade em brincar ou envolver-se em atividades de lazer de forma calma
  14. Não pára ou freqüentemente está a “mil por hora”
  15. Fala em excesso
  16. Responde as perguntas de forma precipitada antes de elas terem sido terminadas
  17. Tem dificuldade de esperar sua vez
  18. Interrompe os outros ou se intromete (por exemplo, mete-se nas conversas/jogos)
  19. Descontrola-se
  20. Discute com adultos
  21. Desafia ativamente ou se recusa a atender pedidos ou regras de adultos
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22. Faz coisas de propósito que

incomodam outras pessoas

23. Culpa os outros pelos seus erros

ou mau comportamento

24. É irritável ou facilmente

incomodado pelos outros

25. É zangado e ressentido

26. É maldoso ou vingativo

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