Translation and cross-cultural adaptation of the Brazilian Portuguese version of the Emotional Memory Scale

Tradução e adaptação transcultural da versão brasileira da Escala de Memória Emocional

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Abstract

Background: Emotional memory is an important type of memory that is triggered by positive and negative emotions. It is characterized by an enhanced memory for emotional stimuli which is usually coupled with a decrease in memory of neutral preceding events. Emotional memory is strongly associated with amygdala function and therefore could be disrupted in neuropsychiatric disorders. To our knowledge, there is no translated and culturally adapted instrument for the Brazilian Portuguese speaking population to assess emotional memory.

Objective: To report the translation and cross-cultural adaptation of a Brazilian Portuguese version of the Emotional Memory Scale, originally published by Strange et al. in 2003.

Methods: The author of the original scale provided 36 lists with 16 words each. Translation was performed by three independent bilingual translators. Healthy subjects assessed how semantically related each word was within the list (0 to 10) and what the emotional valence of each word was (-6 to +6). Lists without negative words were excluded (negative selection), most positive and most unrelated words were excluded (positive and semantic selection, respectively), and lists with low semantic relationship were excluded (semantic assessment).

Results: Five lists were excluded during negative selection, four words from each list were excluded in positive and semantic selection, and 11 lists were excluded during semantic assessment. Finally, we reached 20 lists of semantically related words; each list had one negative word and 11 neutral words.

Conclusion: A scale is now available to evaluate emotional memory in the Brazilian population and requires further validation on its psychometrics properties.

Keywords: Cross-cultural comparison, memory, emotions, amygdala.

Resumo

Introdução: Memória emocional é um tipo importante de memória que é acionado por emoções positivas e negativas. Ela é caracterizada por um aumento de memória para estímulos emocionais que normalmente está associado a um prejuízo de memória para eventos neutros que os precedem. Memória emocional é fortemente relacionada à função da amígdala e, portanto, pode estar alterada em transtornos neuropsiquiátricos. Pelo nosso conhecimento, não existe instrumento traduzido e adaptado culturalmente para a população falante de português brasileiro para avaliar memória emocional.

Objetivo: Descrever a tradução e adaptação transcultural para o português brasileiro da Escala de Memória Emocional, originalmente publicada por Strange et al. em 2003.

Métodos: O autor da escala original forneceu 36 listas com 16 palavras cada. A tradução foi feita por três tradutores bilíngues e independentes. Sujeitos saudáveis foram selecionados para avaliar o quanto cada palavra era semanticamente relacionada dentro da lista (0 a 10) e qual era a valência emocional de cada palavra (-6 a +6). Listas sem palavras negativas foram excluídas (seleção negativa), palavras mais positivas e menos relacionadas de cada lista foram excluídas (seleções positiva e semântica, respectivamente) e listas com relação semântica fraca foram excluídas (avaliação semântica).

Resultados: Cinco listas foram excluídas durante a seleção negativa, quatro palavras de cada lista foram excluídas nas seleções positiva e semântica, e 11 listas foram excluídas na avaliação semântica. Por fim, chegamos em 20 listas de palavras semanticamente relacionadas; cada lista com uma palavra negativa e 11 palavras neutras.

Conclusão: Uma escala está disponível para avaliar memória emocional na população brasileira e requer posterior validação de suas propriedades psicométricas.

Descritores: Adaptação transcultural, memória, emoções, amígdala.

Introduction

Emotional memory (EM) is defined as an enhanced memory for emotional stimuli which is coupled with a decrease in memory for events preceding those stimuli.[1] In healthy subjects, EM has already been proven to be associated with amygdala function. In experiments involving lists of words (in which each list contained a word with a negative emotional valence, surrounded by emotionally neutral words), healthy controls tended to have a greater recall of words with a negative emotional valence and a decreased recall of words immediately preceding them. This feature was not seen in the same experiment with patients with amygdala lesions.[2]

The amygdala, a central nervous system structure that is classically associated with emotional control, may be responsible for mediating EM. Strange et al. showed that, in healthy controls, emotional items of a cognitive task are more likely to be recalled than neutral items. Additionally, neutral items that directly precede emotional stimuli are less likely to be recalled than other neutral items. Yet, when these same subjects received propranolol, a beta-blocker medication that acts in the amygdala, enhanced recall of emotional items and deficient recall of preceding items were diminished.[2] These data corroborate the hypothesis that amygdala lesions may impair a subject from distinguishing if an event has a neutral, positive or negative emotional valence.[3] Therefore, patients with amygdala dysfunction may attribute a negative emotion to an event that most individuals would consider emotionally neutral.

Neuropsychiatric disorders, specifically those with repercussions in amygdala function, may be associated with changes in EM. Studies have demonstrated EM changes in patients with bipolar disorder.[4] Amygdala function and EM may be important markers of neurological and psychiatric disorders. However, to the authors' knowledge, a scale to assess EM had so far not been translated to Brazilian Portuguese and culturally adapted.

Therefore, the objective of this study was to describe the creation of a Brazilian Portuguese translation and cross-cultural adaptation of the Emotional Memory Scale originally published by Strange et al.[3]

Methods

Permission to cross-culturally adapt the scale to Brazilian Portuguese was requested from the original author of the Emotional Memory Scale. We also asked for a full list of words used in his experiments. The author of the original scale sent us 36 lists, each with 16 words, in English. Words from each list were semantically related and each list contained a word with a negative valence. After obtaining permission and the lists, we began a five-step validation process: translation, negative selection, positive selection, semantic selection and semantic assessment.

Translation was done by two independent bilingual translators (T1 and T2) who had had no previous contact with the lists of words. Next, a third independent translator (T3) compared the translations and resolved differences.

A group of healthy controls were recruited from a population of volunteer blood donors at blood bank program of Hospital de Clínicas de Porto Alegre. Inclusion criteria were age 18-60 years, not fulfilling criteria for any psychiatric diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) (checked with Structured Clinical Interview for DSM-IV Axis I Disorders – SCID-I), a negative history of psychiatric and neurological disorders, and a negative history of psychiatric disorders in first-degree relatives.

Each subject received two copies of the 36 lists of 16 words each. In the first copy, each subject was asked to assign a score to the emotional valence of the word, from -6 to +6 (-6 to -3 was considered negative, -2 to +2 was considered neutral, and +2 to +6 was considered positive). In the second copy, each subject had to assign a score from 0 to 10 on how semantically related each word was compared to other words from the list (0 = not semantically related, 10 = completely semantically related). After that, we calculated the mean emotional valence of each word, the mean semantic relationship of each word, and the mean semantic relationship of each list.

In the step of negative selection, lists that did not have any words with a mean negative emotional valence were excluded. In the step of positive selection, we excluded the two most positively ranked words from each list. Semantic selection consisted of excluding the two most semantically unrelated words from each list. Finally, semantic assessment excluded lists with a lower mean semantic relationship.

Figure 1 illustrates the translation and adaptation process. We followed instructions from the author of the original scale, who used a similar process in the translation of the scale to other languages.[2]

All study procedures were approved by the research ethics committee of Hospital de Clínicas de Porto Alegre. Written informed consent was obtained from all subjects prior to their inclusion in the study.

Results

During the translation step, there was variation in the translations done by T1 and T2. T3 resolved

these differences by selecting the translation that best correlated to the original meaning of the word. Also, T3 chose the word he assumed would be best understood by members of the population under investigation.

For the remaining steps, we included 11 healthy subjects, a number that is similar to the number of people used to create the original scale and to translate it to other languages.[2] Mean age was 27.3 years (standard deviation = 3.634), mean years of education was 13.4 (SD = 2.416), and six (54.54 %) of the subjects were women. Our study population had similar characteristics to that of the original study that validated the English scale.

Five out of 36 translated lists did not have any words considered emotionally negative, therefore these lists were excluded during negative selection. The two most positive words from each list were excluded during the positive selection step. The two least related words from each list were excluded during semantic selection. Eleven lists were excluded during semantic assessment due to the low semantic relationship between the words.
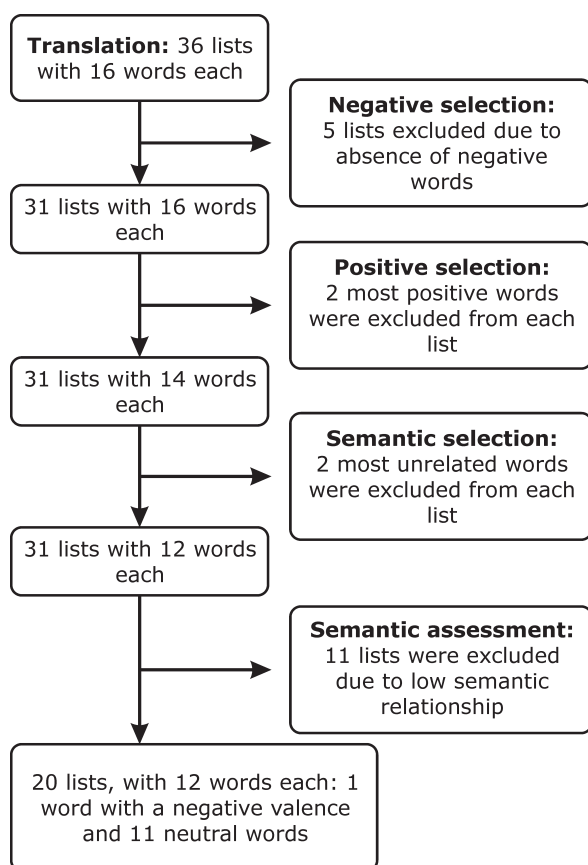
At the end of the five steps, we concluded that 20 lists with 12 words each were valid for use in the Brazilian Portuguese population. Each list has one word considered to be emotionally negative (mean emotional valence between -6 and -3) and 11 words considered to be emotionally neutral (mean emotional valence between -2 and +2). Words from each list were semantically related.

The final version of the Emotional Memory Scale translated and culturally adapted to Brazilian Portuguese is shown in Figure 2. Words considered to have a negative valence are marked with (E). The other 11 words from each list were considered emotionally neutral.

Discussion

Several studies have demonstrated a cognitive deficit in patients with psychiatric disorders.[5] These impairments were already established in diagnoses like bipolar disorder,[6] major depressive disorder[7] and schizophrenia[8] and could be explained by changes in the hippocampus, frontal cortex and amygdala. Studies of cognition in psychiatric disorders are useful to better understand mental illness and to develop new treatments to improve the functionality and well-being of patients.

EM is a cognitive domain which may be altered in patients with bipolar disorder.[4] There is evidence that memory for emotional events may require specific neuroanatomical circuits, which include the amygdala. Also, there is reason to believe that processing of emotions may be disrupted in patients with bipolar disorder: many symptoms associated with mood episodes are controlled by pathways common to emotional processing.[9]

Strange et al.[3] developed a scale to assess EM in healthy subjects and proved that EM was impaired after treating these subjects with propranolol, a beta-blocker that acts in the amygdala. His scale has also been translated to German.[2] However, to our knowledge, this scale has not been tested in patients with bipolar disorder: it would be interesting to do so in order to investigate possible EM changes, compared to EM changes in healthy subjects treated with propranolol. Furthermore, it would be interesting to apply this scale in patients with other psychiatric diagnoses, like major depressive disorder and schizophrenia, in order to assess possible changes in emotional circuits.

Working with two translators and a third blind translator during cross-cultural adaptation of the Emotional Memory Scale helped to reach satisfactory semantic equivalence to the original instrument. This method also ensured that

Figure 1 - Five steps of the translation and cross-cultural adaptation process of the Emotional Memory Scale

differences between two translations were reconciled to define appropriate translation.

Semantic selection and semantic assessment were important to reach a final list of words which were considered semantically related by healthy controls in our social environment. Negative selection and positive selection were important to verify that the final lists had 11 emotionally neutral words and 1 word considered emotionally negative by our population. Having completed these steps, we believe that the scale is now suitable for research on EM in Brazilian Portuguese speakers.

Study limitations include a small number of participants; however, sample size was similar to studies that validated the scale to other languages. It is also important to note that our methods involved only translation and cross-cultural adaptation. Future studies may corroborate validation of the scale. Furthermore, another limitation of the study would be potential cultural differences between different regions of Brazil: our study population was entirely recruited at the same hospital.

Cross-cultural adaptation is a fundamental step when translating a scale.[10,11] The Emotional Memory Scale designed by Strange et al. had already been translated and adapted to German and has been used in important studies about cognition.[2] The Brazilian version of the Emotional Memory Scale may significantly contribute to this field of study. Future studies should assess the reliability of the instrument.

Conclusion

This study described cross-cultural adaptation of the Emotional Memory Scale to Brazilian Portuguese. Five steps were followed, according to the recommendations from the author of the original scale: translation, negative selection, positive selection, semantic selection and semantic assessment. As a result, 20 lists of words were determined, each containing 11 neutral words and 1 word with an emotionally negative valence. The Emotional Memory Scale is considered adequate for use in the Brazilian population, and we believe it will fill a significant gap in this field of study, contributing to the development of future studies about EM in psychiatry.

Acknowledgements

List 1	List 2	List 3	List 4	List 5	List 6	List 7	List 8	List 9	List 10
condutor	comício	articulação	boca	gelo	gengiva	janela	olho	trabalho	carvão
pedestre	pessoa	quadril	nariz	chuva	flúor	mansão	panorama	químico	gás
passageiro	comunidade	calcanhar	oxigênio	lancha	dente	proprietário	vídeo	bancário	caldeira
caminhão	reunião	cotovelo	inalação	nublado	saliva	condomínoi	vista	físico	vapor
camionete	congresso	pulso	pulmão	casaco	pasta	morado	cena	ocupação	tubulação
carro	simpósio	membro	respiração	cidade	canino	apartamento	imagem	advogado	(E) explosão
(E) acidente	congregação	joelho	vento	boia	mandíbula	porta	visão	engenheiro	fogão
ônibus	assembléia	tornozelo	sopro	córrego	(E) afta	garagem	ótica	ator	temperatura
rua	aglomeração	ombro	ventilação	(E) enchente	molar	casa	cinema	vocação	aquecedor
motorista	(E) massacre	braço	(E) sufocamento	luva	oral	chalé	(E) cegueira	(E) assassino	fogareiro
estrada	empresa	(E) amputação	narina	prancha	labial	(E) arrombamento	observador	contador	lenha
avenida	escritório	pé	ar	frio	escova	sobrado	lupa	ofício	forno
List 11	List 12	List 13	List 14	List 15	List 16	List 17	List 18	List 19	List 20
criança	sino	palma	estação	pijama	ferramente	educador	construção	rio	adubo
pai	missa	nervo	baile	dormitório	polir	educação	mirante	lagoa	colina
berço	crença	dedo	festival	lua	parede	professor	telhado	canoa	solo
gravidez	convento	tato	estádio	anoitecer	metal	escola	pico	piscina	cascalho
mamadeira	padre	corpo	show	travesseiro	madeira	faculdade	torre	balsa	jardineiro
cesariana	culto	pele	cobrador	quarto	ferro	(E) reprovação	(E) suicídio	baía	chão
parto	capela	toque	(E) traficante	sono	martelo	colégio	ponte	(E) afogamento	rocha
bebê	pastor	sensação	boate	lençol	(E) crucificação	aula	penhasco	nadador	terreno
nascimento	igreja	textura	rodoviária	cobertor	carpinteiro	universidade	altura	riacho	(E) cadáver
gestação	(E) diabo	superfície	público	escurecer	parafuso	acadêmico	sacada	barco	raiz
(E) aborto	templo	(E) dor	metrô	(E) pesadelo	prego	tutor	alto	água	terra
chupeta	bíblia	vibração	turma	camisola	serrote	prova	prédio	areia	escavação

Figure 2 - Emotional Memory Scale translated and culturally adapted to Brazilian Portuguese.
(E) = word with negative emotional valence.

Disclosure

No conflicts of interest declared concerning the publication of this article.

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