

## BRIEF COMMUNICATION

# Brazilian version of the Cognitive Failures Questionnaire (CFQ): cross-cultural adaptation and evidence of validity and reliability

Jonas J. de Paula,<sup>1,2,3</sup> Danielle S. Costa,<sup>1,3</sup> Débora M. de Miranda,<sup>1,4</sup> Marco A. Romano-Silva<sup>1,5</sup>

<sup>1</sup>Programa de Pós-Graduação em Medicina Molecular, Faculdade de Medicina, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG, Brazil. <sup>2</sup>Departamento de Psicologia, Faculdade de Ciências Médicas de Minas Gerais (FCM-MG), Belo Horizonte, MG, Brazil. <sup>3</sup>Laboratório de Ensino e Pesquisa em Neuropsicologia, Belo Horizonte, MG, Brazil. <sup>4</sup>Departamento de Pediatria, Faculdade de Medicina, UFMG, Belo Horizonte, MG, Brazil. <sup>5</sup>Departamento de Saúde Mental, Faculdade de Medicina, UFMG, Belo Horizonte, MG, Brazil.

**Objective:** Cognitive failures are simple mistakes in routine activities, such as forgetting commitments and experiencing difficulty concentrating. The Cognitive Failures Questionnaire (CFQ) was designed to assess the frequency of these errors in everyday life. Although widely used in psychiatry and psychology, both in clinical and research settings, it has not been adapted for use in Brazil. Our objective was to perform cross-cultural adaptation of the CFQ for the Brazilian reality and assess its validity and reliability.

**Methods:** The original version of the CFQ was translated into Brazilian Portuguese by two independent researchers, analyzed by a multidisciplinary board of experts, and back-translated into English. The final version was administered to 225 adults. Validity was assessed by correlation with the Self Reporting Questionnaire-20 (SRQ-20) and the Adult Attention Deficit/Hyperactivity Disorder Self-Report Scale (ASRS-18). Reliability was analyzed by calculating internal consistency and test-retest stability.

**Results:** The adapted version of the CFQ showed significant correlations with SRQ-20 ( $r = -0.311$ ), ASRS-18 inattention ( $r = 0.696$ ), and hyperactivity/impulsivity ( $r = 0.405$ ) scores. Reliability analysis suggests high internal consistency (0.906) and temporal stability (0.813).

**Conclusion:** The Brazilian Portuguese version of the CFQ showed moderate correlations with other measures of mental health, as well as adequate reliability.

**Keywords:** Cognitive neuroscience; diagnosis and classification; memory; occupational psychiatry; psychometric tests/interviews

## Introduction

Cognitive failures are defined as simple mistakes in routine activities, such as forgetting commitments, discarding materials improperly, and difficulties in financial planning, among others.<sup>1,2</sup> These mistakes appear to be representative of ecological cognitive functioning and are regarded as an outcome of cognitive processing and other psychological factors, including psychopathology and personality.<sup>2</sup> Although they seem harmless, self-perception of cognitive failures is strongly associated with mental disorders.<sup>1-5</sup>

One of the measures most widely used to assess such failures is the Cognitive Failures Questionnaire (CFQ),<sup>1</sup> which consists of 25 questions designed to represent cognitive errors in daily life. These questions reflect different aspects of cognitive functioning, including attention (“Do you fail to notice signposts on the road?”), perception (“Do you fail to see what you want in a supermarket (although it’s there?)”), memory (“Do you find you forget appointments?”),

impulsivity (“Do you say something and realize afterwards that it might be taken as insulting?”), and language (“Do you find yourself suddenly wondering whether you’ve used a word correctly?”). Each question is answered on a frequency scale, ranging from never (0 points) to very often (4 points). The total scale ranges from 0 to 100 points.

The CFQ is widely used in psychiatric and psychological research. Performance on this scale has been related to affective symptoms,<sup>3,5</sup> dissociative states,<sup>4</sup> learning disabilities,<sup>6</sup> stress, and anxiety,<sup>7</sup> among other aspects of psychopathology and psychological functioning.<sup>2,8</sup> CFQ scores have also been associated with objective cognitive performance, especially on measures of executive attention,<sup>9</sup> although its association with objective tests is inconsistent.<sup>2</sup> This may reflected the different demand involved in controlled, usually simple objective cognitive tests when compared to real-life situation, in which not only raw cognitive abilities but also contextual and emotional factors may affect the outcome.<sup>2</sup> In addition to the aforementioned associations, CFQ shows robust psychometric properties, including high internal consistency and test-retest stability<sup>1,10,11</sup> and multidimensional factor structure,<sup>10</sup> usually involving components of memory and attention.

Despite its widespread use and utility in psychiatric and psychological research in several cultures, to the best of

Correspondence: Jonas J. de Paula, Universidade Federal de Minas Gerais - Medicina Molecular, Av. Alfredo Balena, 190, CEP 30130-100, Belo Horizonte, MG, Brazil.  
E-mail: jonasjardim@gmail.com  
Submitted Jan 15 2017, accepted Aug 07 2017, Epub Dec 11 2017.

our knowledge, the CFQ has not been adapted for use in Brazil. Thus, the objective of this study is to perform translation and cross-cultural adaptation of the CFQ for use in Brazil and analyze its validity and reliability in this setting.

## Methods

### *Translation and cross-cultural adaptation of the Cognitive Failures Questionnaire (CFQ)*

We obtained written authorization from one of the authors of the original version of the CFQ, Professor Kathy Parkes, to perform cross-cultural adaptation of the instrument into Brazilian Portuguese. The translation was done by two psychologists with expertise in cognitive functioning. Two of the authors (JJdP and DSC) performed an initial translation of the CFQ, adapting some of the items for the Brazilian context. A synthesis of this translation was then sent to a panel of experts, composed of a researcher with experience in neuropsychology (neuropsychologist, PhD), a researcher with experience in functional evaluation (occupational therapist, PhD), and another researcher with experience in psychometrics (physical educator, PhD). The reviewers' feedback was summarized and implemented in a final version of the instrument, considering the peculiarities of Brazilian culture and the necessary adaptations. Finally, back-translation and reanalysis were performed by a naïve professional and checked by the expert translators. Table 1 presents the original and adapted versions of the questionnaire.

### *Participants and procedures*

We assessed 225 Brazilian adults in an online platform for the present study. The mean (SD) age of participants was 29.21 ( $\pm 10.54$ ) years. They were predominately female (58%), white (52%), single (68%), with a high school education (52%), and had studied in public schools (58%). None of the participants had a history of psychiatric disorders, neurological diseases, or current use of psychotropic drugs. Beside the self-report CFQ, participants completed the Self Reporting Questionnaire 20 (SRQ-20),<sup>12</sup> a screening measure for non-psychotic psychiatric disorders, and the Adult Attention Deficit/Hyperactivity Disorder (ADHD) Self-Report Scale (ASRS-18)<sup>13</sup> for the assessment of ADHD symptoms. The clinical cutoffs of both instruments ( $> 7$  and  $> 21$ , respectively) were used to identify participants with higher probability of presenting psychiatric disorders, and scores below these cutoffs were defined as inclusion criteria.

The participants completed the CFQ on an online platform, which has been previously used in other research.<sup>14</sup> To ensure the equivalence of online and pen-paper versions of the QFC, we compared the scores of 60 participants who completed the pen-paper version to those of the 225 online questionnaires. Both samples were similar in terms of age, education, and sex ( $p > 0.10$  for all comparisons). An independent-samples t-test showed no between-group difference in scores ( $t = -0.289$ ,  $p = 0.773$ ,  $d = 0.08$ ).

This study was conducted in accordance with the Helsinki Declaration and was approved by the local ethics committee (CAEE: 57378016.5.0000.5134). All subjects gave consent for participation.

### *Analysis of psychometric properties*

In this study, we assessed both the validity and the reliability of the CFQ. For analysis of validity, we computed Pearson correlations between CFQ total score and SRQ-20 and ASRS-18 scales, since both internalizing and externalizing are associated with cognitive failures.<sup>2</sup> ASRS-18 scores are particularly representative of cognitive problems, since they involve the inattention dimension of ADHD. Assessment of reliability was done by the analysis of internal consistency (McDonald's omega, since latent structure is multidimensional) and test-retest stability (intra-class correlation coefficient). The latter was calculated in a smaller subsample ( $n=22$ ) with a 1-week interval. We also computed correlations with sociodemographic data.

## Results

The original items and final translation of each item are shown in Table 1. We changed three items to better fit contemporary issues, since the original questionnaire was developed in 1982. The item "Do you forget where you put something like a newspaper or a book?" was changed to "Do you forget where you put something like a newspaper, your cell phone or your keys?"; the item "Do you find you accidentally throw away the thing you want and keep what you meant to throw away – as in the example of throwing away the matchbox and putting the used match in your pocket?" was changed to "Do you find you accidentally throw away the thing you want and keep what you meant to throw away – as in the example of throwing away candy and putting its wrapper in your pocket?"; and the item "Do you leave important letters unanswered for days?" was changed to "Do you leave important letters, messages, or e-mails unanswered for days?." The translated version is freely available at [www.labepneuro.com](http://www.labepneuro.com).

The mean CFQ score was 35.58 (standard deviation, 12.14; range, 10-74). Most of the items showed more frequent values in the intermediate categories (very rarely, occasionally, quite often) when compared to extreme responses (never, very often). Correlations with sociodemographic measures suggest a weak association with age ( $r = -0.263$ ,  $p < 0.001$ ) but no association with formal education ( $r = -0.079$ ,  $p = 0.237$ ) and socioeconomic status measured by the Brazilian Socioeconomic Classification Criteria ( $r = 0.005$ ,  $p = 0.936$ ). We found no differences in scores between men and women ( $z = -1.03$ ,  $p = 0.301$ ).

CFQ scores correlated significantly with SRQ-20 ( $r = 0.311$ ,  $p < 0.001$ ,  $R^2 = 10\%$ ), ASRS-18 inattention ( $r = 0.696$ ,  $p < 0.001$ ,  $R^2 = 48\%$ ), and ASRS-18 hyperactivity/impulsivity ( $r = 0.405$ ,  $p < 0.001$ ,  $R^2 = 16\%$ ) scores. Reliability analysis suggests high internal consistency (0.909) and temporal stability (0.813).

**Table 1** Translation of Cognitive Failures Questionnaire (CFQ) and descriptive statistics for each item

#	Original	Translated	M	SD	N	VR	OC	QO	VO
1	Do you read something and find you haven't been thinking about it and must read it again?	Você lê alguma coisa, percebe que não estava prestando atenção e precisa lê-la novamente?	2.53	0.93	12%	40%	30%	18%	6%
2	Do you find you forget why you went from one part of the house to the other?	Você se esquece por quê foi de um cômodo a outro dentro de casa?	2.01	1.01	5%	28%	34%	25%	7%
3	Do you fail to notice signposts on the road?	Você deixa de notar placas de sinalização ao dirigir?	1.28	0.97	20%	46%	24%	6%	4%
4	Do you find you confuse right and left when giving directions?	Você confunde esquerda e direita ao indicar o caminho a alguém?	1.14	1.21	37%	36%	11%	10%	7%
5	Do you bump into people?	Você esbarra ("tomba") em outras pessoas?	1.40	0.98	12%	54%	19%	10%	4%
6	Do you find you forget whether you've turned off a light or a fire or locked the door?	Você esquece se apagou a luz, a chama do fogão ou se trancou a porta?	1.64	1.08	12%	40%	25%	17%	6%
7	Do you fail to listen to people's names when you are meeting them?	Você não se atenta ao nome da pessoa quando ela está sendo apresentada a você?	1.58	1.15	17%	37%	24%	15%	7%
8	Do you say something and realize afterwards that it might be taken as insulting?	Você diz alguma coisa e depois percebe que isso pode ter sido interpretado como um insulto?	1.61	0.87	7%	43%	36%	12%	2%
9	Do you fail to hear people speaking to you when you are doing something else?	Você tem dificuldade em escutar as pessoas falando com você quando está fazendo outra coisa?	2.07	1.03	4%	28%	33%	25%	9%
10	Do you lose your temper and regret it?	Você perde a calma e se arrepende?	1.63	1.07	9%	46%	26%	10%	8%
11	Do you leave important letters unanswered for days?	Você deixa cartas, mensagens ou e-mails importantes sem resposta por dias?	1.28	1.10	25%	42%	18%	9%	5%
12	Do you find you forget which way to turn on a road you know well but rarely use?	Você esquece aonde virar em um caminho que conhece bem, mas usa pouco?	1.18	1.03	27%	43%	19%	8%	4%
13	Do you fail to see what you want in a supermarket (although it's there)?	Você tem dificuldades em achar o que você quer no supermercado, embora o produto esteja por lá?	1.40	0.91	13%	47%	27%	12%	1%
14	Do you find yourself suddenly wondering whether you've used a word correctly?	Você se encontra subitamente pensando se usou uma palavra de forma correta?	1.88	1.07	9%	30%	32%	21%	7%
15	Do you have trouble making up your mind?	Você tem problemas em se decidir?	1.97	1.16	8%	32%	29%	17%	14%
16	Do you find you forget appointments?	Você esquece os seus compromissos?	1.29	1.00	20%	47%	23%	5%	5%
17	Do you forget where you put something like a newspaper or a book?	Você esquece onde colocou alguma coisa, como o jornal, o celular ou suas chaves?	1.87	1.10	8%	36%	28%	20%	9%
18	Do you find you accidentally throw away the thing you want and keep what you meant to throw away – as in the example of throwing away the matchbox and putting the used match in your pocket?	Você acidentalmente joga fora algo que queria guardar e fica com aquilo que queria descartar (por exemplo, joga fora uma bala e guarda seu papel no bolso)?	0.88	0.91	39%	41%	15%	4%	2%
19	Do you daydream when you ought to be listening to something?	Você "viaja" ou fica "no mundo da lua" quando deveria estar ouvindo alguma coisa?	1.86	1.06	7%	35%	31%	19%	8%
20	Do you find you forget people's names?	Você esquece o nome das pessoas?	1.91	1.06	7%	32%	32%	22%	8%
21	Do you start doing one thing at home and get distracted into doing something else (unintentionally)?	Você começa a fazer alguma coisa em casa e se distrai fazendo algo diferente (sem querer)?	1.79	1.13	12%	31%	29%	19%	8%
22	Do you find you can't quite remember something although it's "on the tip of your tongue"?	Você não consegue se lembrar de alguma coisa, mesmo que esteja "na ponta da língua"?	1.95	0.89	1%	32%	42%	19%	6%
23	Do you find you forget what you came to the shops to buy?	Você se esquece do que saiu para comprar?	0.98	0.84	30%	48%	18%	3%	1%
24	Do you drop things?	Você deixa as coisas caírem (as derrubal)?	1.51	1.13	18%	40%	22%	13%	7%
25	Do you find you can't think of anything to say?	Você não consegue pensar em nada para dizer?	1.44	0.95	14%	44%	29%	10%	3%

M = mean; SD = standard deviation.

Rating: N = never (0 points); VR = very rarely (1 point); OC = occasionally (2 points); QO = quite often (3 points); VO = very often (4 points).

Descriptive data for the total score: M = 35.58, SD = 12.14.

## Discussion

This paper reports on the translation and adaptation of the CFQ into Brazilian Portuguese, as well as preliminary evidence of its validity and reliability for use in the Brazilian reality. Total CFQ scores showed a weak negative correlation with age, and no correlation with formal education, sex, or socioeconomic status. Regarding validity, we found moderate correlation with SRQ-20 scores (a measure of non-psychotic psychiatric symptoms), moderate correlation with ASRS-18 hyperactivity-impulsivity scores, and a strong correlation with ASRS-18 inattention scores. The CFQ also showed high internal consistency and test-retest reliability.

We found a small contribution (8%) of sociodemographic factors on CFQ scores. The only measure correlated with cognitive failures was age. However, the correlation was inverse, suggesting that subjects tend to experience fewer cognitive failures at older ages. This may occur due to the multidimensional nature of the CFQ, in which dimensions such as forgetfulness/memory may elicit worse scores in older groups while distractibility/attention may improve, as seen in other studies.<sup>10</sup> Futures studies should address these points in larger and more heterogeneous samples.

The correlations with measures of mental health are in accordance with other studies which adopted the CFQ.<sup>1,8,15</sup> The associations were stronger in measures more related to attention than those related to depression/anxiety and hyperactivity/impulsivity, which mirrors its stronger correlations with cognitive functions (executive-attention), as also seen in objective cognitive tests.<sup>9</sup> The moderate-to-strong associations suggest dependency between the measures, but higher unique than shared variance, which provides evidence of construct validity.

The internal consistency of the CFQ in this study (0.909) was similar to that reported in other studies, such as Bridger et al.,<sup>15</sup> who reported internal consistencies of 0.92 and 0.93 at two time points. Other studies reported lower coefficients, but usually in the intermediate to high range, as in Merckelbach et al.<sup>11</sup> (0.85). The test-retest stability values found in our study seem consistent with those reported in the original study by Broadbent et al.<sup>1</sup> In their study, reporting a sample relatively like ours, coefficients of temporal stability were 0.824 and 0.803, at intervals of 21 and 64 weeks respectively. These values are higher than those reported by Bridger et al.,<sup>15</sup> who reported only moderate stability (0.71), albeit at a 2-year interval.

Our study has limitations which need to be addressed. First, our sample was recruited through online advertisements, and is not representative of the Brazilian population. This may generate a selection effect, and hinders the generalization of our results. Our sample is also not adequate for a comprehensive assessment of the internal structure of the CFQ (which would require exploratory and confirmatory factor analysis), and the amount of measures used to test its convergent and divergent validity, including objective cognitive measures, was limited. We also lacked an ecological measure of cognitive functioning, such as simulated "real-life" tasks, to better evaluate cognitive failures. These issues should be addressed in future studies.

In conclusion, we have translated the CFQ into Brazilian Portuguese and presented preliminary evidence of its validity and reliability for use in Brazil. The test showed moderate-to-strong correlations with other measures of mental health, as well as adequate reliability.

## Acknowledgements

This study received financial support from Instituto Nacional de Ciência e Tecnologia - Medicina Molecular (INCT-MM), Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG; CBB-APQ-00075-09), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq; 573646/2008-2), and FAPEMIG (APQ-01972/12-10, APQ-02755-10). We would like to thank the undergraduate and graduate students who helped with data collection, Professor Kathy Parkes for the authorization to adapt the Cognitive Failures Questionnaire (CFQ), and Professors Gabriel Coutinho, Luciana Assis Oliveira, and Maicon Albuquerque for revising the translation.

## Disclosure

The authors report no conflicts of interest.

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