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Translation and cross-cultural adaptation of the Brazilian Portuguese version of the Driving Behavior
Survey (DBS)

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Tradução e adaptação transcultural da versão brasileira do Driving Behavior Survey (DBS)

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Abstract

Background: Fear of driving has been recognized as a complex diagnostic entity. For this reason, the use of psychometric instruments is fundamental to advancing research in this area. Psychometric instruments are also necessary for clinical care, as they can help conceptualize the disorder and plan adequate treatment.

Objective: To describe the cross-cultural adaptation of a Brazilian version of the Driving Behavior Survey (DBS).

Methods: The process consisted of: 1) two translations and back-translations carried out by independent evaluators; 2) development of a brief version by four bilingual experts in mental health; 3) experimental application; and 4) investigation of operational equivalence.

Results: The adaptation process is described and a final Brazilian version of the DBS is presented.

Conclusion: A new instrument is now available to assess the driving behaviors of the Brazilian population, facilitating research in this field.

Keywords: Cross-cultural adaptation, psychometry, automobile vehicles, automobile driving.

Resumo

Contexto: O medo de dirigir tem sido reconhecido como uma condição de difícil diagnóstico. Por isso, o uso de instrumentos psicométricos é fundamental para avançar a pesquisa nessa área. Instrumentos psicométricos também são úteis na área clínica, pois podem auxiliar na conceituação do transtorno e no planejamento de tratamentos adequados.

Objetivo: Descrever a adaptação transcultural do Driving Behavior Survey (DBS) para português brasileiro.

Método: O processo consistiu em: 1) duas traduções e retrotraduções elaboradas por avaliadores independentes; 2) elaboração de uma versão sintética por quatro especialistas em saúde mental bilíngues; 3) aplicação experimental; e 4) investigação da equivalência operacional.

Resultados: O processo de adaptação é descrito, e a versão brasileira final do DBS é apresentada.

Conclusão: Um novo instrumento está agora disponível para a avaliação de comportamentos na direção da população brasileira, facilitando a pesquisa na área.

Descritores: Adaptação transcultural, psicometria, veículos automotores, condução de veículos.

Introduction

Fear of driving vehicles can negatively affect the lives of those who have difficulties driving.[1-3] Driving anxiety may range from a subclinical level to intensely negative feelings, which can prevent a person from driving.[4]

Even though there are no conclusive studies about the prevalence of driving anxiety, the literature suggests that this problem affects approximately 7-8% of the general population.[5] Fear of driving is more common in women than in men: females account for as much as 92% of samples/cases.[4,6,7] Conversely, age does not seem to be a determining factor for driving fears.[5,8]

Driving avoidance and driving fear have been defined as a specific phobia according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).[9] However, some studies suggest that fear of driving can also be a component of other anxiety disorders.[2,7] Clapp et al.[3,10] have reported that people who say that they do not like to drive often fear losing control and frequently commit unintended driving violations.

The Driving Behavior Survey (DBS)[10] is a broad-based measure specifically designed to assess anxious driving behaviors; the instrument comprises 21 items, divided into three subscales (seven items each) that measure: 1) anxiety-based performance deficits (questions 1, 4, 5, 6, 9, 14, and 21); 2) exaggerated safety/caution behaviors (questions 3, 8, 11, 12, 13, 16, and 19); and 3) hostile/aggressive behaviors (questions 2, 7, 10, 15, 17, 18, and 20). Each item describes a specific behavior that may be a reaction to stressful situations that occur while people are driving and that make them nervous or anxious. A 7-point word scale is used to answer each question: never, very infrequently, infrequently, sometimes, frequently, very frequently, and always. DBS subscales are scored according to the mean number of items endorsed.

The DBS and its subscales have been reported to present adequate psychometric properties. Internal consistency was 0.7 for the performance deficits subscale, 0.78 for the safety/caution behaviors subscale, and 0.86 for the hostile/aggressive behaviors subscale. Reliability, measured by a 4-week test-retest, was 0.61 for the performance deficits subscale, 0.68 for the safety/caution behaviors subscale, and 0.89 for the hostile/aggressive behaviors subscale.[10]

This paper aims to describe the translation and cross-cultural adaptation to Brazilian Portuguese of the DBS, an instrument introduced in 2011 by Clapp et al.[11] to assess anxious driving behaviors.

Methods

After obtaining permission from the author of the original scale, we began a four-step adaptation process based on Herdman et al.,[11] involving: 1) translation; 2) back-translation; 3) semantic equivalence analysis; and 4) experimental application of the DBS in Brazilian Portuguese.

Translation was performed by two independent Brazilian translators (T1 and T2) who had no previous knowledge of the DBS. The resulting translations were then given to two other translators for back-translation (R1 and R2).

The products of these two steps were presented to four mental health specialists, two of whom had extensive familiarity with this type of instrument. The back-translations were compared to the text of the original DBS to evaluate and analyze the equivalence between the texts. A synthetic version in Brazilian Portuguese was produced by comparing the two translated versions and the original text for each item.

Once the synthetic Brazilian version of the DBS had been produced, an experimental trial was conducted to evaluate understanding of the instrument by the target population. Eighteen respondents were asked to complete the synthetic version; respondents were adults of both sexes with varied education levels (three men and three women had completed primary education, three men and three women had completed secondary education, and three men and three women had university degrees). All respondents had a driver's license.

The experimental application involved two steps. First, respondents answered the DBS by themselves. The authors identified items that were not adequately answered and reviewed the answers with the respondents. The authors then revised these items to solve any comprehension problems. Finally, a revised version of the DBS was given to five new respondents (two men with primary education, two women with secondary education, and one man with higher education level).

This study was approved by the Research Ethics Committee of Institute of Psychiatry of Universidade Federal do Rio de Janeiro (UFRJ) (CAAE protocol no. 0028.0.249.000-07). All respondents involved in the experimental application of the Brazilian Portuguese version of the DBS were informed of the objectives of the study and signed an informed consent form.

Results

Table 1 shows the questions of the original instrument, the translations made into Brazilian Portuguese (T1 and T2), back-translations (R1 and R2), and the synthetic version produced.

Table 1 - Driving Behavior Survey: original version, translations (T1 and T2), back-translations (R1 and R2), and synthetic version

Original version	Translations	Back-translations	Synthetic version
1. I lose track of where I am going.	T1: Eu perco a noção de onde estou indo.	R1: I lose notion where I'm going.	Perco a noção de onde estou indo.
	T2: Perco a noção de onde estou indo.	R2: I lose notion of where I'm going.	
2. I yell at the driver/drivers who make me nervous.	T1: Eu grito com motorista/motoristas que me deixam nervoso.	R1: I scream with driver/drivers that make me nervous.	Grito com o(s) motorista(s) que me deixa(m) nervoso.
	T2: Grito com os motoristas que me deixam nervoso.	R2: I yell with drivers who make me nervous.	
3. I slow down when approaching intersections, even when the light is green.	T1: Eu desacelero quando me aproximo de cruzamentos, mesmo quando a luz está verde.	R1: I decelerate when I approach intersections, even when the light is green.	Desacelero quando me aproximo de cruzamentos, mesmo quando o semáforo (sinal de trânsito/sinaleira) está verde.
	T2: Desacelero quando me aproximo de cruzamentos, mesmo quando o sinal está verde.	R2: I slow down when I approach crosses, even when the traffic signal is green.	
4. I have trouble staying in the correct lane.	T1: Eu tenho dificuldade em permanecer na pista correta.	R1: I have difficulty remaining in the correct lane.	Tenho dificuldade em permanecer na pista/faixa correta.
	T2: Tenho dificuldade em permanecer na pista correta.	R2: I have difficulties staying on the right track.	
5. I drift into other lanes.	T1: Eu derrapo para outras faixas.	R1: I skid to other tracks.	Não consigo me manter na mesma pista/faixa.
	T2: Eu escorrego para outras pistas.	R2: I slip to other tracks.	
6. I forget to make appropriate adjustments in speed.	T1: Eu esqueço de fazer os ajustes apropriados na velocidade.	R1: I forget to make appropriate adjustments in speed.	Esqueço-me de fazer o controle apropriado de velocidade.
	T2: Esqueço-me de fazer os ajustes apropriados na velocidade.	R2: I forget to make the appropriate adjustments in speed.	
7. I let the driver who made me nervous know that I am upset.	T1: Eu deixo o motorista que me deixou nervoso saber que eu estou chateado.	R1: I let the driver that made me nervous know that I'm upset.	Demonstro que estou chateado para o motorista que me deixou nervoso.
	T2: Deixo o motorista que me deixou nervoso saber que eu estou chateado.	R2: I let the driver that made me nervous know that I'm upset.	
8. I maintain a large distance between myself and the driver in front of me.	T1: Eu mantenho uma grande distância entre meu veículo e o motorista na minha frente.	R1: I keep a large distance between my vehicle and the driver in front of me.	Mantenho uma grande distância entre meu veículo e o do motorista a minha frente.
	T2: Mantenho uma distância grande entre mim e o motorista a minha frente.	R2: I keep a large distance between myself and the driver in front of me.	
9. I forget where I am driving to.	T1: Eu esqueço para onde eu estou dirigindo.	R1: I forget where I'm driving to.	Esqueço para onde estou dirigindo.
	T2: Esqueço para onde estou dirigindo.	R2: I forget where I'm driving to.	
10. I make gestures at the driver/drivers who made me nervous.	T1: Faço gestos para o motorista/motoristas que me deixam nervoso.	R1: I make gestures to the driver/drivers that make me nervous.	Faço gestos para o(s) motorista(s) que me deixa(m) nervoso.
	T2: Faço gestos e sinais aos motoristas que me deixam nervoso.	R2: I make gestures and signals to drivers who make me nervous.	
11. I try to put distance between myself and other cars.	T1: Eu tento manter uma distância entre meu veículo e os outros carros.	R1: I try to keep a distance between my car and the other cars.	Tento manter uma distância entre meu veículo e os outros carros.
	T2: Tento manter distância entre eu e os outros carros.	R2: I try to keep some distance between me and the other cars.	

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12. I maintain my speed in order to calm myself down.	T1: Eu mantenho a minha velocidade, na tentativa de me acalmar.	R1: I keep my speed, trying to calm me down.	Mantenho minha velocidade com o intuito de me acalmar.
	T2: Mantenho minha velocidade para me acalmar.	R2: I keep my speed to calm myself.	
13. I try to stay away from other cars.	T1: Eu tento ficar longe dos outros carros.	R1: I try to stay away from other cars.	Tento me manter afastado dos outros carros.
	T2: Tento me manter afastado dos outros carros.	R2: I try to keep some distance from the other cars.	
14. I have trouble finding the correct lane.	T1: Eu tenho dificuldade em encontrar a pista correta.	R1: I have difficulty finding the correct lane.	Tenho dificuldade em encontrar a pista/faixa correta.
	T2: Tenho dificuldade em encontrar a pista correta.	R2: I have difficulties finding the right track.	
15. I pound on the steering wheel when I'm nervous.	T1: Eu bato no volante quando estou nervoso.	R1: I hit the steering wheel when I'm nervous.	Bato no volante quando estou nervoso.
	T2: Bato no volante quando estou nervosa.	R2: I bang the steering wheel when I'm nervous.	
16. I decrease my speed until I feel comfortable.	T1: Eu diminuo minha velocidade até que eu me sinta confortável.	R1: I decrease my speed until I feel comfortable.	Diminuo minha velocidade até que me sinta confortável.
	T2: Diminuo a minha velocidade até me sentir confortável.	R2: I slow down my speed until I make myself comfortable.	
17. I honk my horn at the driver who made me nervous.	T1: Eu buzino para o motorista que me deixou nervoso.	R1: I horn to the driver who made me nervous.	Buzino para o motorista que me deixou nervoso.
	T2: Buzino para o motorista que me deixou nervoso.	R2: I honk to the driver who made me nervous.	
18. I try to find ways to let other drivers know that they are making me nervous.	T1: Eu tento encontrar maneiras de demonstrar aos outros motoristas que eles estão me deixando nervoso.	R1: I try to find ways to demonstrate to other drivers that they are making me nervous.	Tento encontrar maneiras de demonstrar aos outros motoristas que eles estão me deixando nervoso.
	T2: Tento encontrar maneiras de deixar os outros motoristas saberem que estão me deixando nervoso.	R2: I try to find out manners to let other drivers know that they're making me nervous.	
19. During bad weather, I drive more cautiously than other vehicles on the road.	T1: Durante o mau tempo, eu dirijo com mais cautela do que outros veículos na estrada.	R1: During bad weather, I drive more cautiously than other vehicles on the road.	Durante um tempo ruim, dirijo mais cautelosamente que os outros veículos da estrada.
	T2: Durante um tempo ruim, eu dirijo mais cautelosamente do que os outros veículos na estrada.	R2: During a bad weather, I drive more cautiously than other vehicles on the road.	
20. I swear/use profanity while I am driving.	T1: Falo/uso palavrões enquanto eu estou dirigindo.	R1: I swear while I'm driving.	Esbravejo quando estou dirigindo.
	T2: Xingo ou amaldiçoo quando estou dirigindo.	R2: I huff or curse when I'm driving.	
21. I have difficulty merging into traffic.	T1: Eu tenho dificuldade em entrar em um trânsito. (Eu tenho dificuldade em confluir para o trânsito).	R1: I have difficulty entering a traffic. (I have trouble converging into traffic).	Tenho dificuldade em me inserir no tráfego.
	T2: Tenho dificuldade em me inserir no tráfego.	R2: I have difficulties inserting myself into the traffic.	

For some items, the text of only one of the translations was used, especially when the two translations were similar. In other cases, a combination of T1 and T2 was considered more appropriate. Moreover, in some situations, the specialists made changes to the sentences written by the translators, in an attempt to improve the semantic equivalence of the questions.

After the first experimental trial, the specialists observed that, in item 3, the word "light" could be translated as "luz," "sinal," "semáforo," or "sinaleira."

Because there were many linguistic variations, the authors chose to use "semáforo (sinal de trânsito/sinaleira)," improving understanding for Brazilian respondents of any geographic region and education level.

The results of the first experimental trial with the Brazilian version of the DBS showed that, in general, respondents had no problems answering the questions. Five people reported that some of the items looked similar to them, which is one of the characteristics of the original DBS. One person noted that the words "faixa" and "pista" were used interchangeably, without a consistent pattern. To solve this issue, the specialists decided to use "pista/faixa" for all items including the word "lane" in the original instrument.

Once these changes were made to the synthetic version, this new version was administered to another five respondents. There were no comprehension problems in this second round of testing. Our results suggest that the Brazilian version of the DBS can be used to study driving anxiety in the Brazilian population.

Table 2 shows the final version of the DBS.

Discussion

Psychometric instruments are very important tools used in the mental health and psychiatric fields to

Table 2 - Brazilian Version of the Driving Behavior Survey

Muitas vezes, situações acontecem enquanto as pessoas dirigem que as deixam nervosas (por exemplo, condições meteorológicas, tráfego intenso, acidentes próximos, etc.). Segue abaixo uma lista de comportamentos que podem ou não ser relevantes para você nessas situações. Baseado na sua experiência pessoal, por favor, indique com que frequência você exibe cada um destes comportamentos quando uma situação estressante de direção acontece que o deixa nervoso, ansioso, tenso ou desconfortável. Por favor, indique o que geralmente você faz, não o que você acha que deveria fazer.

	Nunca	Muito pouco frequente	Pouco frequente	Às vezes	Frequente	Muito frequente	Sempre
1. Perco a noção de onde estou indo.							
2. Grito com o(s) motorista(s) que me deixa(m) nervoso.							
3. Desacelero quando me aproximo de cruzamentos, mesmo quando o semáforo (sinal de trânsito/sinaleira) está verde.							
4. Tenho dificuldade em permanecer na pista/faixa correta.							
5. Não consigo me manter na mesma pista/faixa.							
6. Esqueço-me de fazer o controle apropriado de velocidade.							
7. Demonstro que estou chateado para o motorista que me deixou nervoso.							
8. Mantenho uma grande distância entre meu veiculo e o do motorista a minha frente.							
9. Esqueço para onde estou dirigindo.							
10. Faço gestos para o(s) motorista(s) que me deixa(m) nervoso.							
11. Tento manter uma distância entre meu veículo e os outros carros.							
12. Mantenho minha velocidade com o intuito de me acalmar.							
13. Tento me manter afastado dos outros carros.							

(cont.)

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14. Tenho dificuldade em encontrar a pista/faixa correta.
15. Bato no volante quando estou nervoso.
16. Diminuo minha velocidade até que me sinta confortável.
17. Buzino para o motorista que me deixou nervoso.
18. Tento encontrar maneiras de demonstrar aos outros motoristas que eles estão me deixando nervoso.

correctly identify mental disorders. The use of self-administered instruments is a quick and inexpensive way to evaluate symptoms and to reach a correct diagnosis.[12-14]

Fear of driving has been recognized as a complex diagnostic entity, as there are different subtypes that may be manifestations of other anxiety disorders, e.g., agoraphobia.[7] For this reason, the use of psychometric instruments is fundamental to advancing research in this area. Psychometric instruments are also useful in clinical care, as they can help conceptualize the disorder and plan adequate treatment.

In the literature, several psychometric instruments have been described that deal with driving fears and behaviors. Specific measures have been designed to assess fear of travel, distress, avoidance, and maladaptive driving strategies associated with driving anxiety and negative thoughts that people may have while driving.[15-17] However, none of the instruments available assesses driving behaviors that are consequences of situations that make people nervous or anxious, as is the case of the DBS. In Brazil, to date there were no validated instruments that could be used for this purpose – a scenario that motivated us to adapt the DBS.

The purpose of the DBS is to evaluate and measure a range of anxious driving behaviors in three domains: anxiety-based performance deficits, exaggerated safety/caution behaviors, and hostile/aggressive behaviors. Each domain is associated with fear of driving: performance deficits are associated with perceived driving skills; safety/caution behaviors are associated with accidents and social-related driving fears; and hostile/aggressive behaviors are linked to driving anger and accident-related fears. This instrument also has a potential to measure treatment-related changes among people with fear of driving, and may be used as a screening device within general clinical settings.[10]

During the cross-cultural adaptation process, working with two translations and two back-translations was useful because it facilitated discussion when differences between the versions were found. Thus, this methodology made it easier to achieve semantic equivalence with the original version of the DBS.

The experimental application of the DBS allowed for final adjustments of the synthetic version, resolving some translation problems and improving the understanding of this survey among people with low educational levels. To achieve this positive result, it was useful to work with respondents of both genders and different education levels.

A cross-cultural adaptation process is important when translating an instrument originally created in another language.[18] Even though the DBS has been shown to have a stable measure structure, an ongoing validation process is still needed. Also, the sample of the original study comprised university students only, which is a very specific population. Future studies evaluating the validity and reliability of the Brazilian version of the DBS can contribute to this ongoing process.

Conclusion

A cross-cultural process was conducted to adapt the DBS to Brazilian Portuguese. The process involved four steps: translation, back-translation, semantic equivalence analysis, and experimental application. We verified that most of the respondents understood the behaviors described in the questions adapted to Brazilian Portuguese. Thus, the final version of the DBS in Brazilian Portuguese seems to be semantically equivalent and applicable to Brazilian people of different cultural and educational levels.

Because there are few existing instruments to evaluate driving behaviors in Brazil, the Brazilian version of the DBS will be useful to improve the conceptualization and treatment of driving fear.

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