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Brazilian cross-cultural adaptation and content validity of the Delaware School Climate Survey-Student (DSCS-S)

Adaptación transcultural y validación del contenido del Delaware School Climate Survey-Student (DSCS-S) en Brasil

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Abstract

School climate assessments aim to evaluate the social, emotional, ethical, academic and environmental aspects of school life, such as rules, goals, values, interpersonal relationships, teaching and learning practices and institutional structures. This paper presents the process of cross-cultural adaptation and content validity investigation of the Delaware School Climate Survey Student (DSCS-S) in Brazil. The process consisted in translations and back-translation steps, pilot study, evaluations by an expert committee, rigorous revisions of the instrument and calculation of de Content Validity Coefficient (CVC). The analyses suggest the importance of a thorough method of cross-cultural adaptation to provide evidence of its content validity, and the existence of content validity evidence (CVC > 0.8 for all instrument's scales) of the DSCS-S in Brazil. This instrument can support Brazilian schools in the assessment of school climate in order to develop more effective school strategies, programs and policies.

Keywords: school climate; psychometrics; psychological tests; adaptation; validation studies

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Resumen

El clima escolar evalúa las dimensiones: social, emocional, ética, académica y ambiental de la vida escolar, tales como normas, metas, valores, relaciones interpersonales, prácticas de enseñanza y aprendizaje y estructuras institucionales. El presente artículo pretende presentar el proceso de traducción, adaptación cultural y de investigación de la validación del contenido del instrumento de clima escolar del Delaware School Climate Survey-Student (DSCS-S) en Brasil, especialmente la investigación de la validad del contenido del instrumento a través del coeficiente de validad de contenido (CVC). El proceso consistió en etapas de traducción y retraducción, estudio piloto con público albo, evaluaciones con especialistas y minuciosos ajustes en el instrumento. El análisis apunta a la importancia de seguir un riguroso método de adaptación transcultural de instrumentos para garantizar la validez del contenido, así como la existencia de evidencias de validez de contenido (CVC > 0,8 para todas las escalas del instrumento) del DSCS-S para la lengua portuguesa de Brasil. Este instrumento puede ayudar a las escuelas brasileñas a evaluar el clima escolar y desarrollar estrategias, programas y políticas escolares más eficaces.

Palabras clave: clima escolar, psicometría, test psicológicos, adaptación, estudios de validación.

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Schools have a major impact on academic and psychosocial development, not only during the formative school years, but also well into adulthood (Haynes, Emmons, & Ben-Avie, 1997). Considering this fact, it is concerning that academic and behavioral problems in schools are increasing or at least remaining at alarming high levels (Fuchs, 2008). This is true in Brazil. Although public schools in Brazil have improved in recent years, especially since the 90s, they continue to be characterized by high rates of students repeating grades and not completing school, low academic achievement scores, and

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teachers who are often trained poorly and paid low salaries (Bruns, Evans, & Luque, 2012). The last edition of the Brazilian National Survey of School Health (IBGE, 2013), conducted with 109.104 students across Brazil, revealed that 8.8% of the students dropped out school in the 30 days preceding the survey due to feeling unsafe in the route from home to school, 8.0% of the students dropped out of school because did not feel safe in the school environment; 20.8% students had practiced some sort of bullying (swearing, threatening or teasing) against peers; 7.3% of students had used illicit drugs such as marijuana, cocaine, crack, and ecstasy and 70.5% had consumed alcohol at least once during their lifetimes.

In light of the above, there is a clear need in Brazilian schools to assess and examine school climate. Previous studies have shown that a positive school climate improves academic performance and reduces problematic/risk behaviors (Hopson & Lee, 2011; Klein, Cornell, & Konold, 2012). In light of such research there also is a need for valid and reliable measures of school climate. Unfortunately, measures of school climate are lacking in Brazil, as we know of no validated measures in the Portuguese language, and especially measures validated with Brazilian children. In our review of the literature on school climate, searching SCOPUS, PsychInfo, Scielo, and Lilacs databases, we found no studies reporting use of a measure of school climate that had been validated for the Brazilian population or was written in Brazilian Portuguese.

The purpose of the present study was to describe the initial stages of developing such a measure, with a focus on the process used to adapt from English into Brazilian Portuguese the Delaware School Climate Survey-Student (DSCS-S; Bear, Yang, Mantz, Pasipanodya, Boyer, & Hearn, 2014) and to establish some evidence of its content validity. The DSCS-S includes a school climate scale, and three additional scales that assess constructs shown to be closely related to school climate – bullying victimization, student engagement, and use of positive, punitive, and social-emotional learning techniques by school personnel. Such translation is an important first step in validating the DSCS-C for use in schools in Brazil. Before presenting this process, we first discuss the construct of school climate and its importance. Next, we report the procedures and results of the process we followed in translating the instrument from English into Portuguese. Finally, we describe our future studies for further stablishing further evidence supporting the validity of the DSCS-S.

School Climate and Its Importance

School climate has been defined, conceptualized, and measured in many different ways, but nearly all recognize that positive social relationships and structure, or safety, are two critical dimensions. For example, Haynes et al. (1997) define school climate as "the quality and consistency of interpersonal interactions within the school community that influence children's cognitive, social, and psychological development" (p. 322). Recognizing the importance of interpersonal relationships, but placing additional emphasis on safety, Cohen, McCabe, Michelli, and Pickeral (2009) define school climate as the "quality and character of school life, that includes norms, values, and expectations that support people feeling socially, emotionally, and physically safe" (p. 182).

There is no consensus among researchers on the dimensions that best represent the construct of school climate (Cohen et al., 2009). Dimensions often include not only relationships (e.g, teacher-student, student-student, home-school) and safety but also teaching and learning practices, the physical environment, clarity and fairness of rules, support for cultural pluralism, and student engagement (Bear et al., 2014; Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Zullig, Koopman, Patton, & Ubbes, 2010; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013; Bradshaw, Waasdorp, Debnam, & Johnson, 2014). The importance of school

climate is seen in research showing that poor school climate is associated with low academic performance (Brand et al., 2003, Wang et al., 2014), school avoidance (Brand et al., 2003; Welsh, 2000), youth delinquency (Welsh, 2000), substance abuse (Brand et al., 2003), victimization (Welsh, 2000), depression and low self-esteem (Brand et al., 2003; Way, Reddy, & Rhodes, 2007, Gendron, Williams, & Guerra, 2011), bullying (Nansel et al., 2001, Gendron et al., 2011, Wang et al., 2014), and greater behavior problems and risk behaviors in general (Bear, Gaskins, Blank, & Chen, 2011; Hopson & Lee, 2011; Klein et al., 2012).

Delaware School Climate Survey-Student (DSCS-S)

The DSCS-S, a self-report instrument, consists of 78 items and four scales: the school climate scale (Scale I), the positive, punitive, and social-emotional learning (SEL) techniques scale (Scale II), the bullying victimization scale (Scale III), and the student engagement scale (Scale IV). Its development was guided by two theoretical frameworks: (a) authoritative discipline theory (Baumrind, 1971, 1996; Bear, 2005; Brophy, 1996; Gregory & Cornell, 2009) and (b) Stockard and Mayberry's (1992) theoretical framework of school climate, but particularly the former. Both theories suggest that a healthy school climate is characterized by the balance of (a) support, or responsiveness, as seen in adults caring and responding to the social and emotional needs if students, and (b) structure, or demandingness, as see in clear behavioral expectations, fairness of rules, and adult supervision of students' behavior.

The survey is intended to provide schools useful information to evaluate and help develop programs and interventions within the school environment, and has been developed and continuously revised since its conception in 2007. In this study we used the 2014 version (Bear et al., 2014). Students respond to each item using a Likert scale. For the school climate, school techniques, and engagement scales (scales I, II and IV), a 4-point response format is used, with 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree*, and 4 = *Strongly Agree*. For the bullying victimization scale (scale III), a 6-point response format item is used: 1 = *Never*, 2 = *Sometimes*, 3 = *Once or Twice a Month*, 4 = *Once a Week*, 5 = *Several Times a Week*, and 6 = *Everyday*.

The first scale, school climate, and the other three scales are considered independent constructs that are associated with school climate (school techniques, bullying victimization and student engagement). Recent studies investigating the psychometric properties of the DSS-S included 34,323 students in 133 public elementary, middle, and high schools in the state of Delaware in the U.S.A. (Bear et al., 2014). Results included evidence supporting the construct validity of each scale, with confirmatory factor analyses demonstrating invariance across race/ethnicity, grade levels, and gender groups. Scores on scales and subscales were shown to correlate significantly with academic achievement and school suspensions for inappropriate behavior. Results also yielded internal consistency coefficients ranging from .76 to .87 for the eight subscales of Scale I; .72 to .85 for the three subscales of Scale II, .86 to .92 for the four subscales of Scale III, and .85 and .89 for the two subscales of Scale IV.

Additional evidence supporting the construct validity of the DSCS-S come from studies of earlier versions of the survey (2007 and 2011 versions), in which confirmatory factor analyses demonstrated invariance across race/ethnicity, grade levels, and gender groups in samples of North-American (Bear et al., 2011; Bear et al., 2014), Chinese children (Yang et al., 2013), and Japanese children (Bear, Uribe-Zarain, Manning, & Shiomi, 2009). In addition to the student version, there are teacher/staff (Bear, Yang, Pell, & Gaskins, 2014) and home (Bear, Yang, & Pasipanodya, 2014) versions of the surveys. The same items are found across the three versions, which allows for a direct comparison of scores between students, teachers/staff, and parent. However, as seen in Table 1, not all of the

same scales and subscales are found across all three versions. Whereas the student version is designed for grades 3-12, the teacher/staff and home versions can be used at any grade level.

Table 1 – Scales and subscales of Delaware school Surveys

Scale I - Delaware School Climate Scale		
Student Survey	Teacher/Staff Survey	Home Survey
Teacher-Student Relations	Teacher-Student Relations	Teacher-Student Relations
Student-Student Relations	Student-Student Relations	Student-Student Relations
Respect for Diversity	Respect for Diversity	Respect for Diversity
Clarity of Expectations	Clarity of Expectations	Clarity of Expectations
Fairness Rules	Fairness Rules	Fairness Rules
Scholl Safety	Scholl Safety	Scholl Safety
Student Engagement School-wide	Student Engagement School-wide	
Bullying School-wide	Bullying School-wide	
	Teacher-Home Communications	Teacher-Home Communications
	Teacher-Staff Relations	
Total School Climate	Total School Climate	
		Parent Satisfaction
Scale II – Delaware School Techniques		
Student Survey	Teacher/Staff Survey	Home Survey
Positive Behavior Techniques	Positive Behavior Techniques	
Punitive Techniques	Punitive Techniques	
Social Emotional Learning Techniques	Social Emotional Learning Techniques	
Scale III – Delaware Bullying Victimization Scale		
Student Survey	Teacher/Staff Survey	Home Survey
Physical Bullying[1]		Physical Bullying[1]
Verbal Bullying[1]		Verbal Bullying[1]
Social/Relational Bullying[1]		Social/Relational Bullying[1]
Cyberbullying[2]		
Scale IV – Delaware Student Engagement Scale		
Student Survey	Teacher/Staff Survey	Home Survey
Cognitive & Behavioral		Cognitive & Behavioral
Emotional		Emotional

[1]Used for grades 3-12 in US.
[2]Used only for grades 6-12 in US.

Method

According to Borsa, Damásio and Bandeira (2012), there is no consensus regarding procedures to be followed in the cross-cultural adaptation of a measure since the process depends on the characteristics of the instrument, its application and context for use, and particularities of the target population. Nevertheless, in translating the DSCS-S into Portuguese, we followed a combination of procedures recommended by Borsa et al. (2012), Gjersing, Caplehorn and Clausen (2010) and Cassepp-Borges, Balbinotti and Teodoro (2010). In the first step, the DSCS-S was translated from English into Portuguese by two Portuguese native speakers fluent in English. The translations were conducted independently. A third independent translator toghether with a researcher, with a Ph.D. in Psychology and a doctoral with a Masters' degree, synthesized the two translations, while resolving any differences in translations. Next, qualitative content validation was performed in a pilot study, in which five children and adolescents completed the survey individually. After completing the survey, they discussed any questions and misunderstandings about the items with the researchers. This procedure was adopted in order to investigate if the survey's items and instructions were comprehensible to

the target population (Borsa et al., 2012). Based on input from the five students, minor revisions were made in the translation of items.

The translation process took into account cultural and linguistic characteristics of Brazil. For example, the eighteenth item of Scale I in the original version was "The school's Code of Conduct is fair". The Code of Conduct of American Schools is designed to clarify schools' rules regarding student behaviors, and also to expose disciplinary procedures. Since it is not a usual practice for Brazilian schools to have a formal code of conduct available for students' guidance, this item was translated to "Rules of behavior for students are fair", which fits Brazilian reality and still covers the overall purpose of the original item that seeks to examine the fairness of rules of behavior. The same procedure was adopted for all DSCS-S items in order to maintain the original purpose of the sentence and at the same time adapt it to the language used in Southern Brazil.

The next step was to provide some evidence of the content validity of the Brazilian version of the DSCS-S, and was conducted by an expert committee composed of three professors with Ph.D. in School Psychology and Psychometrics. Quantitative content validation serves to evaluate the clarity, relevance, and representativeness of the instrument's items (Cassepp-Borges et al., 2010). As a quantitative indicator, we calculated the coefficient of content validity (CVC; Hernández-Nieto, 2002). As recommended by Cassepp-Borges et al. (2010), the CVC is based on item ratings by 3-5 judges with expertise in the area assessed. Judges assess each item in four categories: clarity of content, practical relevance, theoretical relevance, and adequacy to theoretical dimension.

In evaluating the three areas of clarity of content, practical relevance and theoretical relevance, experts, who worked independently, rated each item using a Likert scale with scores ranging from 1 (lower adequacy of the item) to 5 (higher adequacy of the item). For each item and for each of the three areas, a CVC was derived. In calculating the CVC we followed three steps recommended by Henández-Nieto (2002): (a) based on the expert committee' scores, the average score was calculated for each item in the three categories; (b) the CVC was calculated for each item, though the division of the item's average score by the maximum value it could receive; (c) to calculate the total CVC for the instrument, the CVC of each item was divided by the total number of questions in the instrument. An item is considered adequate if the CVC coefficient is over 0.8 (Cassep-Borges et al., 2010). If an item a coefficient falls bellow 0.8, the item should be revised.

In evaluating the adequacy to theoretical dimension, the expert committee considered the four constructs evaluated in the DSS-S: SC (school climate), ST (school techniques), B (bullying), and SE (student engagement). Considering that the category of theoretical dimension is a qualitative variable, Fleiss' *kappa* coefficient was calculated (Cassep-Borges et al., 2010). The Fleiss' *kappa* coefficient is defined as a statistical measure of association used to describe and test the degree of agreement (reliability and accuracy) in the classification of multiple experts (Fleiss 1981; Perroca & Gaidzinski, 2003; Nakano & Siqueira, 2012). The method described by Fleiss (1981) classifies *kappas* bellow 0.40 as poor, 0.40 to 0.75 as fair to good, and over 0.75 as excellent. Streiner and Norman (2008) indicate that a coefficient ≥ 0.7 is sufficient to determine reliability.

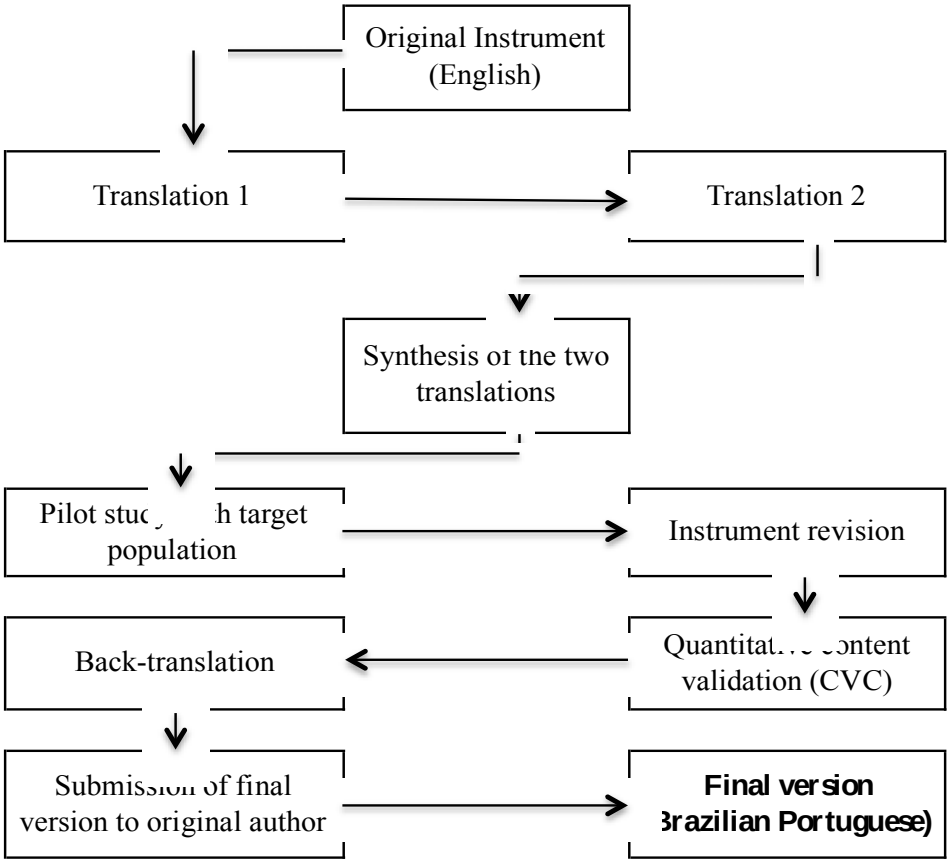
Table 2 presents an example of the CVC questionnaire answered by the expert committee. In addition to rating each item, three independent judges, were asked to provide comments and suggestions about the items and scale content that might be useful in any revisions.

Table 2 – Example of the Content Validity Coefficient questionnaire

Itens	Clarity of Content	Practical Relevance	Theoretical Relevance	Adequacy to Theoretical Dimension	Observation
Most students pay attention in class	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	1 - 2 - 3 - 4 - 5	SC - ST - B - SE	

Based on the expert's committee ratings, comments, and suggestions, a final version of the questionnaire was translated (from Portuguese to English). This was made by a fourth independent translator who was fluent in English and a Portuguese native speaker. The back-translation was sent to the original author of the DSCS-S to ensure that the translatio was equivalent to the original English version. Figure 1 describes how the process was developed and which steps were completed until the final version was reached.

Figure 1
Cross-cultural adaptation process of the DSCS-S.



Results

All scale scores of the DSS-S were found to be above 0.8 for clarity of content, practical relevance and theoretical relevance. Likewise, the instrument's total score was above 0.8 in all categories assessed. Scale IV scored .99 or above in all three categories, scoring 1 for Practical Relevance, which reflects total agreement between members of the expert committee for the 11 items assessed in this scale. At the item level, scores for 7 of 78

items were below .8 and thus were revised. Although the scores of these items were below .8, these results were not sufficient to decrease the final score of each subscale and the total score of the DSCS-S, as shown in Table 3. It is important to emphasize that the expert committee reviewed these seven questions after the revisions were made for the final version of the instrument.

Table 3 – CVC Scores for each scale of DSCS-S

	Clarity of Content	Practical Relevance	Theoretical Relevance
Scale I – School Climate	0,90	0,91	0,92
Scale II – School Techniques	0,86	0,87	0,88
Scale III – Bullying	0,86	0,9	0,9
Scale IV – Student Engagement	0,99	1	0,99
Total DSCS-S	0,89	0,91	0,92

With respect to the adequacy to theoretical dimension category, and as shown in Table 4, the overall Fleiss' kappa was .795, indicating an almost perfect agreement between members of the expert committee. Table 4 also shows that all scales obtained a kappa above .70, indicating positive agreement between members of the expert committee.

Table 4 – Adequacy to theoretical dimension for each dimension assessed by the DSCS-S

	Scale I	Scale II	Scale III	Scale IV	
	School Climate	School Techniques	Bullying	Student Engagement	Overall Kappa
Observed Kappa	0.701	0.941	0.841	0.743	0. 795
p-value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
95% Confidence Interval	upper: 0.829 lower: 0.573	upper: 1.0 lower: 0.813	upper: 0.969 lower: 0.713	upper: 0.871 lower: 0.615	upper: 0.872 lower: 0.718

Discussion

In the present study, we aimed to describe the procedures for the cross-cultural adaptation of the Brazilian version of the DSCS-S and for establishing some evidence of its content validity. Having adequate tools to measure school climate is crucial for the development of interventions designed to improve school climate and promote the mental health of students (Thapa et al., 2013). The entire process of adapting an instrument for a different country, with a different cultural background, cannot be reduced to simply translating the measure. Following a rigorous method helps establish evidence of the instrument's content validity, as well as respects the cultural richness of each environment (Delgado-Rico, Carretero-Dios, & Ruch, 2012). It is important to note that Brazil has great cultural diversity and thus it is a challenge to develop an instrument that is useful throughout the Brazilian territory. A limitation of this study is that the language used in this Portuguese version may not be the best for other regions of the country. Linguistic and cultural expressions used for this translation are those used in Southern Brazil and can differ greatly between regions. Therefore, research aiming to expand the use of the DSS-S across Brazil is recommended.

Measuring school climate is essential to improving the quality of interventions, while taking into account the particularities of each school (Thapa et al., 2013). In light of research cited previously, a growing interest among clinical and developmental psychology researchers is centered in how school climate might be included in interventions that target the outcomes mentioned. This is seen in the growing number of school-wide programs for preventing behavior problems and promoting mental health that are designed to improve school climate. They include universal-level programs for promoting social and emotional learning (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Zins & Elias, 2006) and for preventing bullying (Merrell, Gueldner, Ross, & Isava, 2008; Swearer, Espelage, Vaillancourt, & Hymel, 2010) and school violence (American Psychological Association Zero Tolerance Task Force, 2008; Jimerson & Furlong, 2006).

Such programs are particularly important in schools in which bullying and school violence are problems. This would include Brazil, where concerns about bullying and school violence (Malta et al., 2010; Lisboa, Wendt & Pureza, 2014), as well as low academic achievement (Bruns et al., 2012), have become increasingly common. The lack of instruments to measure school climate in Brazil and the need for evaluations of institutional and interpersonal characteristics of Brazilian schools is evident and thus evidence of the validity of the DSCS-S may help meet this demand. Use of the DSCS-S, and similar instrument, may contribute to the development of public policies and intervention programs (Cohen et al., 2009; Thapa et al., 2013).

The present study is limited to the cross cultural adaptation of the DSCS-S. Further methodological steps are needed, and are underway, to presente evidence of the measure's construct and criterion related validity and its internal consistency. For the full version of the Brazilian Portuguese version of the DSCS-S send an e-mail to carolina.lisboa@pucrs.br

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