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Brief research report

Cross-linguistic validity of the French and Dutch versions of the Very Short form of the Physical Self-Inventory among adolescents

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ABSTRACT

The study tested the cross-linguistic validity of the Very Short form of the Physical Self-Inventory (PSI-VS) among 1115 Flemish (Dutch version) adolescents, and a comparison sample of 1103 French adolescents (French version; from Morin & Maïano, 2011a). Flemish adolescents also completed a positively worded reformulation of the reverse-keyed item of the physical attractiveness (PA) subscale. Confirmatory factor analyses (CFA) supported the factor validity and reliability (except for the Dutch PA subscale) of the PSI-VS, and its partial measurement invariance across samples. CFA conducted on the modified version of the Dutch PSI-VS (11 original items plus the positively worded replacement), presented satisfactory reliability (ω = .67–.89), and was fully invariant across sexes, age groups, and body mass index categories. Additionally, results revealed latent mean differences across sexes and body mass index categories. Therefore, the modified Dutch PSI-VS can be used whenever there is a need for a very short physical self-concept questionnaire.

Introduction

Few physical self-concept (PSC) instruments have been adapted or validated for children and adolescents (Marsh & Cheng, 2012) and the length of available instruments represent a serious drawback for studies involving multiple instruments or assessments. Maïano et al. (2008) thus developed a very short form 12-item version of the Physical Self-Inventory (PSI-VS) for adolescents (see Table S1 in the online supplements). Using a sample of 829 French adolescents Maïano et al. (2008) found support for the factor validity, reliability (ω = .70–.76), and measurement invariance of the PSI-VS. Morin and Maïano (2011a) recently cross-validated the PSI-VS among 1103 French adolescents, and supported its factor validity, reliability (ω = .64–.90), measurement invariance, and convergent validity.

A single study has since examined the psychometric properties of the PSI-VS in another language. Scalas, Morin, Maïano, and Fadda (2013) administered the Italian PSI-VS to a sample of 1121 adolescents and young adults. Results supported the factor validity and measurement invariance of the PSI-VS. The composite reliability of the subscales was also acceptable (ω = .68–.91), except for physical attractiveness (ω = .52). This result appeared related to a single reverse-keyed item (*Nobody finds me good-looking*). Morin and Maïano (2011b) also discussed potential shortcomings of this item in a study of a longer PSI version, leading them to propose replacing this item by a positively worded alternative (*Everybody thinks that I am good-looking*). Similar problems have already been noted for the Physical Self-Perception Profile (PSPP; Lindwall, Aşçı, & Hagger, 2011) and the Physical Self-Description Questionnaire (PSDQ; Aşçı, Fletcher, & Çağlar, 2009). It is thus probable that this kind of item, more specifically when used to assess physical attractiveness, may be more reactive to language, culture, or social desirability.

Presently, two PSC questionnaires are available in Dutch: the 40-item PSPP (Van de Vliet et al., 2002), and the 70-item PSDQ (Simons, Capio, Adriaenssens, Delbroek, & Vandenbussche, 2012). Unfortunately, the Dutch PSPP has only been examined among Flemish adults, and the Dutch PSDQ has been only investigated in a small sample (N = 206) of adolescents. Consequently, no short or validated instruments are accessible for Dutch-speaking youth. Clearly, the development and validation of a Dutch PSI-VS would facilitate the assessment of the PSC among Dutch-speaking youth, and

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contribute to its cross-linguistic validity. Additionally, French and Dutch are the two co-official languages in Belgium, with most residents speaking only one of these languages. Thus, the examination of the measurement invariance of the French- and Dutch-speaking version of the PSI-VS would facilitate the assessment of PSC across French- and Dutch-speaking Belgian adolescents.

The main objective of this study was to examine the cross-linguistic validity of the Dutch PSI-VS among Flemish adolescents. Specifically, we develop a Dutch version of the original PSI-VS and examine its factor validity and reliability among Flemish adolescents. Second, we examine the factor validity and reliability of a modified version of the PSI-VS comprising a positively worded reformulation of the reverse-keyed physical attractiveness item. Third, we examine the measurement invariance of the original PSI-VS between Flemish adolescents and French adolescents from Morin and Maïano's (2011a) study. The use of French data from Morin and Maïano (2011a) aims to ascertain that the psychometric properties of the PSI-VS remained unchanged by the linguistic adaptation process. Finally, we examine whether the factor structure of the best PSI-VS version (original or modified) is invariant across sexes, age groups, and body mass index (BMI) categories.

Method

Sample

The Flemish sample comprised 1115 adolescents (12–19 years; M_{age} = 15.88 years) attending two secondary schools in the Belgian province of Limburg. This sample included: (a) 514 boys and 601 girls; (b) 318 early (aged 12–14) and 797 late adolescents (aged 15–19); and (c) 167 underweight, 846, normal-weight, and 102 overweight-obese youth.

The French sample from Morin and Maïano's (2011a) study included 1103 French adolescents (11–18 years; M_{age} = 15.45 years). This sample comprised: (a) 429 boys and 674 girls; (b) 343 early (aged 11–14) and 760 late adolescents (aged 15–18); and (c) 124 underweight, 877 normal-weight, and 102 overweight-obese youth.

Measures

Demographics. Participants were asked to self-report their sex, age, height, and weight. This information was used to categorize them into BMI (Weight/Height^2) categories based on sex- and age-specific cut-off scores (Cole, Bellizzi, Flegal, & Dietz, 2000; Cole, Flegal, Nicholls, & Jackson, 2007).

PSI-VS. The original PSI-VS was translated into standard Dutch following standardized back-translation techniques (Van de Vrijver & Hambleton, 1996). The Dutch version includes the 12 original items (Table S1 in the online supplement), plus the new positively worded physical attractiveness item, and covers the same six subscales as the original PSI-VS: global self-worth (GSW), physical self-worth (PSW), physical condition (PC), sport competence (SC), physical attractiveness (PA), and physical strength (PS). Items are rated on a 6-point scale ranging from 1 (*Not at all*) to 6 (*Entirely*). Flemish adolescents completed these 13-item (12 original items, plus the modified item), while French adolescents only completed the original 12 items. We refer to the original 12-items as the "original" version, and to the 12-item version in which the negatively worded PA item is replaced by the reformulated item as the "modified" version.

Procedure

This research met the ethical requirements for research with human participants in Belgium and France. Authorization to perform the study was first obtained from the school. Then, appropriate consent procedures were followed to obtain participants written and voluntary agreement prior to data collection. All participants who returned the consent forms answered the questionnaire anonymously. The questionnaires were completed in class under supervision of the teacher.

Analyses

Analyses were conducted using Mplus 7.11's (Muthén & Muthén, 2013) robust maximum likelihood estimator (MLR), and full-information estimation to handle the few missing data (Flemish: 0.09–0.54%; $M_{missing}$ = 0.26%; French: 0.36–4.81%; $M_{missing}$ = 1.51%). A confirmatory factor analysis (CFA) was first conducted on the original PSI-VS separately for both samples. Because latent variables are based on two indicators, CFA were locally identified using essentially tau-equivalent constraints (ETEC; Little, Lindenberger, & Nesselroade, 1999). ETEC simply tests whether the two indicators can be considered equivalent in order to improve local identification of the factors. Among the Flemish sample, two additional CFA models were examined with the modified PSI-VS.

The measurement invariance of the original PSI-VS across the Flemish and French samples was then examined in the same sequence used by Morin and Maïano (2011a). The measurement invariance of the best Dutch version (original versus modified) was then examined across sexes, age groups [early (12–14 years) versus late (15–19 years) adolescents], and BMI categories (underweight, normal weight, and overweight-obese).

Model fit was assessed based on multiple indicators (Marsh, Hau, & Grayson, 2005): the chi-square (χ^2) test of exact fit, the comparative fit index (CFI > .90 or >.95), the Tucker-Lewis index (TLI > .90 or >.95), and the root mean square error of approximation (RMSEA <. 08 or <.06). Composite reliability was computed from the CFA parameter estimates, using McDonald's (1970) omega. Measurement invariance was evaluated by examining robust χ^2 difference test ($\Delta R\chi^2$; Satorra, 2000) and changes in CFIs ($\leq$.01) and RMSEAs ($\leq$.015) (Chen, 2007; Cheung & Rensvold, 2002).

Results

Factor Validity and Reliability

CFA results are presented in Tables 1 and 2. First, the CFA without ETEC (Models 1-1 and 2-1) of the original PSI-VS showed a satisfactory fit to the data among both samples. Models using ETEC (Models 1-2 and 2-2) resulted in a large decrease in fit in the Flemish, but not French, sample, suggesting that ETEC are appropriate for the French, but not Dutch, data. Modification indices revealed that ETEC should be relaxed for the SC and PA subscales in the Flemish sample. This model of partial ETEC (Model 1-3) provided a satisfactory fit to the data.

The modified PSI-VS also provided satisfactory fit to the data among the Flemish sample without ETEC (Model 1-4), but not with ETEC (Model 1-5). Modification indices revealed that ETEC should be relaxed for the SC subscale. This model (Model 1-6) provided a satisfactory fit to the data, showing that the modified item permits the local identification of the PA factor.

CFA standardized parameter estimates for the original and modified PSI-VS are presented in Table 2. Findings shows that the original French PSI-VS presents substantial and significant (λ = .61–.93) loadings, latent factor correlations (r = .44–.87), and