Career Decision Self-Efficacy Scale — Short Form: A Rasch analysis of the Portuguese version

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ARTICLE INFO

ABSTRACT

The present study analyzes the psychometric properties of the Career Decision Self-Efficacy Scale — Short Form (CDSE-SF) in a sample of Portuguese secondary education students using the Rasch model. The results indicate that the 25 items of the CDSE-SF are well fitted to a latent unidimensional structure, as required by Rasch modeling. The response scale, containing 5 categories, showed proper functioning; therefore, the people and item parameters could be estimated with high precision (.89 and .97, respectively). Differential item functioning (DIF) analyses confirmed that there were no differences in the results of the CDSE-SF concerning gender. Finally, psychometric implications derived from the results of the present study are discussed, and suggestions are provided for future investigations.

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1. Introduction

The concept of self-efficacy in Bandura's social cognitive theory (1977, 1997) was introduced in a study of vocational behavior conducted by Hackett and Betz (1981) with the purpose of understanding and clarifying women's career choices and trajectories. In this foundational study, the authors outlined this concept's potentials and proposed its generalization to other groups of subjects and other aspects of vocational development. From that study, the concept of career self-efficacy has been applied to multiple areas of academic and professional development and different populations and groups (Betz, 2007; Hackett & Betz, 1995; Lent & Hackett, 1987). The concept has attracted the attention of many researchers (e.g., Betz & Luzzo, 1996) since its original definition by Taylor and Betz (1983) as an individual's belief that he or she is capable of successfully completing tasks and specific behaviors required in career decision making.

Career decision self-efficacy is based on two well-established psychological theories: one developed in the disciplines of social and personality psychology (the theory of self-efficacy) and the other originating from vocational psychology (the theory of career maturity). Taylor and Betz (1983) performed a synthesis of the two theoretical perspectives and constructed the Career Decision Self-Efficacy Scale (CDSE) based on this conceptualization. The CDSE assesses the expectations of self-efficacy in the domain of behaviors relevant to the process of career decisions. The construct is defined based on the behavioral indicators that characterize the five areas of competency for making career choices outlined in Crites' hierarchical model of career maturity (1978). These five areas include accurate self-appraisal, gathering occupational information, goal selection, making plans for the future and problem solving, which constitute the set of subscales of the CDSE. Each of these five subscales was originally composed of 10 statements that described the tasks necessary for career decision-making, for a total of 50 items that comprise the global scale.

Betz, Klein, and Taylor (1996) subsequently developed a short version of this measurement tool with the purpose of facilitating its use in applied and research contexts. In their review, the authors maintained the original theoretical structure but eliminated five items from each subscale. The Career Decision Self-Efficacy Scale — Short Form (CDSE-SF) has 25 items divided by

the identical five scales of the long version. The answers are initially obtained through a continuum with 10 levels, ranging from 1 = not at all confident to 10 = totally confident. However, Betz, Hammond, and Multon (2005) have more recently proposed shortening the response scale to five levels, ranging from 1 = not at all confident to 5 = totally confident. Betz et al. (2005) concluded that this change did not affect the psychometric quality of the short version of the scale, either in terms of the accuracy of the responses (i.e., internal consistency) or the estimates of convergent and discriminant validity (i.e., construct validity) of the results.

In terms of internal consistency (measured through Cronbach's alpha coefficient), Taylor and Betz (1983) initially reported values ranging from .86 to .89 for the five subscales of the CDSE and .97 for the full scale (long version). The alpha values for the subscales of the short version are typically observed to be lower, ranging from .73 to .83, with the total value for the CDSE-SF at .94 (Betz et al., 1996). In the empirical study with the new response scale (Betz et al., 2005), the reliability coefficients ranged from .78 to .87 for the five subscales, assuming a value of .94 or .95 in the full scale, depending on the sample used. These data are similar to the data obtained by Nilsson, Schmidt, and Meek (2002) in their study on the generalization of reliability; these authors reported Cronbach's alpha coefficients for the full scale ranging from .92 to .97 ($M = .94, SD = .01, n = 11$) for samples relating to studies with the CDSE-SF. The mean values for the subscales ranged from .72 to .83.

When assessing career self-efficacy in a sample of high school students, the values of internal consistency of the CDSE-SF, for both the 25 items and the five subscales, were comparable to the values presented by Betz et al. (1996) for college students. The cross-cultural studies of the CDSE-SF generally reported values of internal consistency similar to the values observed in the United States (Creed, Patton, & Watson, 2002; Hampton, 2006). For the Australian students, the authors reported a reliability of .94 for the full scale with Cronbach's alphas ranging from .70 to .78 on the subscales; the results were practically identical for the South African students (.93 for the total result, ranging from .70 to .79 for the subscales). Similar results were obtained by Hampton (2006) in a sample of Chinese secondary students.

Studies conducted with the Portuguese version of the CDSE-SF have shown that the estimates of internal consistency have been lower than those observed in other countries. With higher education students, coefficients ranged from .53 to .71 for the subscales, with a value for the full scale ranging between .88 and .90 (Kumar, Silva, & Paixão, 2007; Paixão, Leitão, Miguel, & Borges, 2004); with high school students, coefficients are similar ranging from .41 to .73 for the subscales, with a value for the full scale of .89 or .90 (Silva & Paixão, 2005; Silva, Paixão, & Albuquerque, 2009), respectively.

In short, this review of studies using the CDSE allows for the conclusion that the typical level of internal consistency is adequate when analyzing the pattern of responses for all items regardless of the cultural background or level of education of the subjects who were assessed using the scale. However, when examining the results at the subscale level, the reliability estimates are much more variable between the studies and are generally of lower quality (i.e., often below .7).

Despite the convergence of results from different studies, regarding the psychometric information relative to the concurrent reliability and validity indicators of the CDSE-SF, the performance of the subscales concerning dimensionality is inconsistent overall.

The initial study of the dimensionality of the CDSE (Taylor & Betz, 1983), with college students via exploratory Principal Components Analysis (PCA), led authors to report a unidimensional structure as the one that best fit the data. They concluded that "the measure (…) may be more appropriately viewed as a (…) general domain of career decision-making tasks and behaviors" (Taylor & Betz, 1983, pp. 79–80). An identical conclusion was reached by Hampton (2006), suggesting that the CDSE-SF is a "measure of generalized self-efficacy covering a domain of career decision-making behavior rather than an instrument that measured self-efficacy expectations for five career decision skills" (p. 151) and, later on, by Chaney, Hammond, Betz, and Multon (2007), defending that the scale is primarily a general measure of career decision-making self-efficacy.

Studies using Confirmatory Factor Analysis (CFA), all conducted only with higher education samples from different countries (Gaudron, 2011; Hampton, 2005; Miller, Roy, Brown, Thomas, & McDaniel, 2009; Watson, Brand, Stead, & Ellis, 2001), also differ in their results. The only one that confirmed the original theoretical structure of the CDSE-SF was that of Miller et al. (2009). None of the studies of Watson et al. (2001), Hampton (2005) or Gaudron (2011) was able to adequately fit the data leading their authors to recommend that the scale be considered as a general measure of career decision self-efficacy.

The only study examining the dimensionality of the Portuguese version of the CDSE-SF (Silva et al., 2009), with high school students using PCA, did not replicate the five-factor model proposed for the scale. As the majority of the items saturated on the first component, the authors concluded that the Portuguese version of the scale predominantly measures generalized self-efficacy expectations concerned with the process of career decisions.

Except for the study by Miller et al. (2009), the theoretical model of measurement proposed for the CDSE is not replicable, regardless of the type of sample, language version or analytical procedures used. The literature reviewed equally emphasizes the presence of a latent unidimensional structure that would be sufficient to explain the pattern of responses in the CDSE (e.g., Creed et al., 2002). Specifically, it shows that the values of variance explained by this component/factor vary according to the study and range from 16% to 40% ($M = 28\%; SD = 9$). Moreover, the number of items saturated in this first factor/component range from 8 to 21 ($M = 12; SD = 4$). Finally, Hampton (2005, p. 103) presents *eigenvalues* of 8.31, 1.25 and 1.02 for factors 1, 2 and 3, respectively. According to the criteria proposed by Reckase (1979), which have been used to assess the multidimensionality of the measures, the first factor explains more than 20% of the variability, and the first *eigenvalue* is several times greater than the second; these findings support the existence of a dominant first factor (Hambleton, Robin, & Xing, 2000, p. 568).

Taylor and Betz (1983) had previously accepted this hypothesis when they concluded that the existence of a general factor was likely, provided the high values of internal consistency for the full scale and the high values of correlation obtained between the subscales and factor structures.