Separation of Competency and Affect Components of Multiple Dimensions of Academic Self-concept:

A Developmental Perspective

Herbert W. Marsh, University of Western Sydney, Macarthur, Australia

PO Box 555 Campbelltown NSW 2560 Australia

Tel: (02) 9772-9633 FAX (02) 9772-1565, E-Mail: h.marsh@uws.edu.au (on internet)

Rhonda Craven & Raymond Debus, University of Sydney, Australia

4 December, 1997

Overview

Based on the Shavelson, Hubner and Stanton (1976) model of self-concept, Marsh (1988, 1989, 1990, 1993) developed the set of Self Description Questionnaires (SDQ) to measure multiple dimensions of self-concept for preadolescent primary school students (SDQ-I), adolescent high school students (SDQ-II), and late adolescents and young adults (SDQ-III). The set of three SDQ instruments have provided particularly strong tests of the Shavelson et al. model, and have been evaluated to be among the best multidimensional instruments in terms of psychometric properties and construct validation research (Hattie, 1992; Byrne, 1996; Boyle, 1994; Wylie, 1989). In this study we consider the three academic scales (Reading, Math, School) from the normative archive of the preadolescent (SDQ-I) instrument that are defined by responses to eight positively worded items - four competency items (e.g., I am good at..) and four affective items (e.g., I like..).

A major focus of particularly developmental research has been to clarify the emergence and progressive differentiation of more specific facets of self-concept. SDQ research has contributed substantially to this research, demonstrating that even very young children differentiate between different facets of self-concept to a much greater extent than had previously been thought possible. A main thrust of the large body of theoretical and applied work based on the SDQ instruments (e.g., Marsh, 1990; 1993; Marsh & Craven, 1997) has been on the extreme domain specificity of academic self-concept - particularly the separation of Math and Reading self-concepts. Although not our major purpose, we present confirmatory factor analyses (CFAs) evaluating the development of this domain specificity during preadolescence.
In contrast to this domain specificity, an implicit assumption in the SDQ-I design that has received little attention is that the affect and competency subcomponents form a single (unidimensional) factor for each domain. After first reviewing the Shavelson et al. model and early SDQ research, we summarize several studies questioning this assumption (Chapman & Tunmer, 1995; Eccles, Adler, & Meece, 1984; Eccles, Wigfield, Harold, & Blumfield, 1993; Eccles, Wigfield, Yoon, Harold, Arbreton, Freedman-Doan, & Blumenfeld, in press; Simpson, Licht, Wagner, and Stader (1996); Skaalvik, 1996; Tanzer, Sim & Marsh, in press) and elaborate developmental perspectives of this issue. Based on this review, we develop a construct validity approach to this problem that blends theory, data, statistical models, and substantive interpretation to compare competing interpretations of the separation of competency and affect components from a developmental perspective.

Methods

In Study 1 we compare CFA models positing two (competency and affect) factors, three domain (Reading, Math, School) factors, and six factors (separate competency and affective factors for each domain) based on a newly expanded normative archive of SDQ-I responses (N = 11,029). In this study we evaluate how the domain specificity of academic self-concept - and, more specifically, the separation of competency and affective subcomponents - varies with age in a cross-sectional study of students in Years 2-7 (ages 7-13).

In Study 2 we considered a multiple-cohort-multiple-occasion (MCMO) design based on responses to three year groups (Years 3, 4 and 5; N = 1,397) on each of three occasions that allows us to simultaneously assess cross-sectional (as in Study 1) and longitudinal comparisons.

Summary of Findings

The central issue in each study is whether competency and affective components need to be separated and, if they do, how the separation of these subcomponents develops with age. The results from both studies show that students of all ages considered here differentiate between the competency and affective components of Reading, Math, and School self-concepts. Consistent with previous research our results show that correlations between Reading, Math, and School self-concept systematically decrease with age at least through to Year 5. However, correlations between the competency and affect component of each domain is surprisingly stable across different ages and over time within each age. As children develop and acquire life experience, they more clearly distinguish between different academic self-concept domains, but the relation between liking a particular school subject and perceiving oneself to be competent in that school subject remains consistently and surprisingly stable.
Because we consider such a large sample of children covering such a wide range of preadolescent ages, it is possible to more rigorously evaluate the invariance of the factor structure underlying self-concept responses over different age cohorts (Study 1) and longitudinally for children within each of several age cohorts (Study 2). The most critical test of factorial invariance is the invariance of the factor loadings. In Study 1 there was good support for the complete invariance of all factor loadings across the six age cohorts comprising the SDQ-I normative archive and in Study 2 there was good support for the complete invariance of all factor loadings across the nine sets of factor loadings representing three waves of (longitudinal) data for each of three (cross-sectional) age cohorts. Together with the accumulated support for the SDQ-I, these new results demonstrate the appropriateness of this instrument for preadolescent children.

Significance

The results clearly show that the competency and affect components of the same domain are distinguishable, but across Studies 1 and 2 the average correlation between these components is about .75 for Reading and Maths (and slightly lower for School). Furthermore, the extent to which these components are distinguished does not seem to vary much with age or even the particular domain. Hence, even though these components do not combine to form a strictly unidimensional scale, it is clear that self-perceived competence and affect are strongly related. Hence, a critical question is whether the affect and competency components are sufficiently distinct to recommend that researchers consider these as separate scales in applied studies? To this question we offer a qualified "yes." The first qualification is that these results -- particularly with the very large competency/affect correlations -- do not invalidate the use of a total domain score that incorporates both competency and affect components. However, like the use of any total scores based on potentially distinguishable components, researchers should be aware that trends based on the total score may not necessarily be reflected in the different components. The second qualification is due to the fact that our results have focused primarily on "within-construct" aspects of the separation. Support for this recommendation requires evaluations of "between-construct" aspects of the separation in which the competency and affect components are shown to have distinctive patterns of results with a wide variety of external validity criteria. Thus, for example, we would expect that objective test scores and school grades would be more highly correlated with the competency component of each domain whereas coursework selection and plans to pursue further work might be more highly correlated with the affect component of each domain. Similarly, interventions that focus on developing academic skills may have greater effects on the competency components whereas those targeting more positive feelings may have more impact on the affect component. From this perspective, the Tanzer et al. (in press) findings that Australian and Singapore students are similar in terms of mean scores on the affect components but differ systematically on competency components supports the distinction from a cross-cultural perspective (in which culture is the external validity criterion). More generally, support for the separation of the competency and affect components of each domain requires that the competency components are systematically more highly related to external criterion variables to which they are most logically or theoretically related, and likewise for the affect components. Although clearly beyond the scope of any one investigation, the results of this study do open up a potentially exciting new direction for the development of self-concept theory and practice.
References


